NODAL FEVER

A. A. LENDON

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BY THE SAME AUTHOR

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NODAL FEVER

(FEBRIS NODOSA)

SYNONYMS: ERYTHEMA NODOSUM—
ERYTHEMA MULTIFORME

BY

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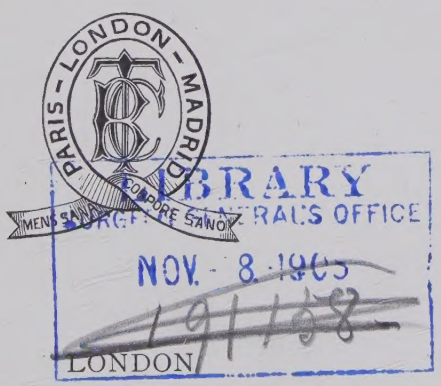

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1905

PREFACE

I SHALL scarcely be charged with premature publication of my views upon the subject of erythema nodosum, seeing that they appeared in print as long ago as 1890, and now are the outcome of observations extending over a quarter of a century. My ideas failed at the time to commend themselves to those to whom they were addressed fourteen years ago, but I have the satisfaction of knowing that my paper directed attention to the disease, and that one at least of my *confrères* is prepared to corroborate the general accuracy of my observations. In venturing to submit these opinions to the criticism of a wider circle of readers, I feel much less hesitation, because longer clinical experience has simply served to strengthen them.

I have to thank my brother, Dr. E. H. Lendon, for his kindness in seeing this pamphlet through the press.

A. A. L.

ADELAIDE, SOUTH AUSTRALIA,
July, 1905.

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NODAL FEVER

CHAPTER I

INTRODUCTION

I FEEL at the outset that some explanation is required from me in order to justify, if this be possible, my temerity in venturing to rename such an old and well-recognised disease as erythema nodosum.

I have not done so merely from a pedantic wish to purify the nomenclature of medicine, which would indeed be a Herculean task, but rather from a desire to emphasize the opinion which I first expressed many years ago (1)—viz., that the general behaviour of this disease suggests, and is in every way consistent with, the theory that it is in reality an acute specific infectious fever, and not merely an affection of the skin, as has hitherto been usually taught.

Quite apart, however, from any views as to its proper place in the classification of diseases, it must be con-

fessed, I think, that the name 'erythema nodosum,' though pleasingly familiar, is at once inappropriate and slightly barbarous. The word ἐρύθημα is frequently used by classical writers, such as Thucydides and Hippocrates, and means 'redness on the skin,' and in a slightly different form, ἐρεύθημα, it occurs in Galen (2). In physiology at the present day it means a blush, the result simply of a vaso-motor paralysis; in surgery we were accustomed to hear in the olden days the tautological expression, an 'erythematous blush,' frequently used to denote septic inflammation around a wound; in dermatology the erythemata constitute a group of affections, supposed not to be due to any infection, such as we know to be the cause of erysipelas, but characterized by inflammatory redness of the skin, with more or less serous exudation into the skin and subcutaneous tissues. It would perhaps be better if the use of the word 'erythema' were restricted to its physiological meaning, and considered as equivalent to 'hyperæmia,' and therefore quite distinct from any inflammatory redness, whether traumatic or toxæmic in origin.

When the Latin adjective 'nodosum' came to be tacked on to the Greek noun 'erythema' I cannot ascertain, nor do I know if it has the sanction of a greater antiquity than the middle of the eighteenth century. 'Nodus' means a swelling or knob, and therefore the adjective 'nodosa' seems very appropriate to be retained

in conjunction with the word 'febris,' and thus the complete term 'febris nodosa' does not constitute a very violent transition from the familiar name so long in use.

As the English equivalent of the new name 'febris nodosa,' I have adopted the term 'nodal fever' in preference to the literal translation 'nodose fever,' or to the alternative expression 'node fever.' 'Nodal' seems easier of pronunciation than 'nodose,' and more familiar to the ear, whilst its termination brings it into line with some other terms, such as 'paludal fever.'

It will be observed that I retain the names 'erythema nodosum' and 'erythema multiforme' as synonyms for nodal fever. This is done because I consider erythema nodosum to be only a variety of erythema multiforme. At the same time, lest I should appear to be attempting to prove too much, I may mention that the cases from which my observations and conclusions have been drawn have all of them exhibited erythema nodosum on the legs in a typical and unmistakable form.

To justify this change in nomenclature I shall endeavour to show that erythema nodosum is preceded and attended by pyrexia and general signs of malaise; that its course is marked by a prodromal period, by a stage of eruption, and by a period of convalescence; and that it occurs under conditions which strongly suggest infection from one case to another.

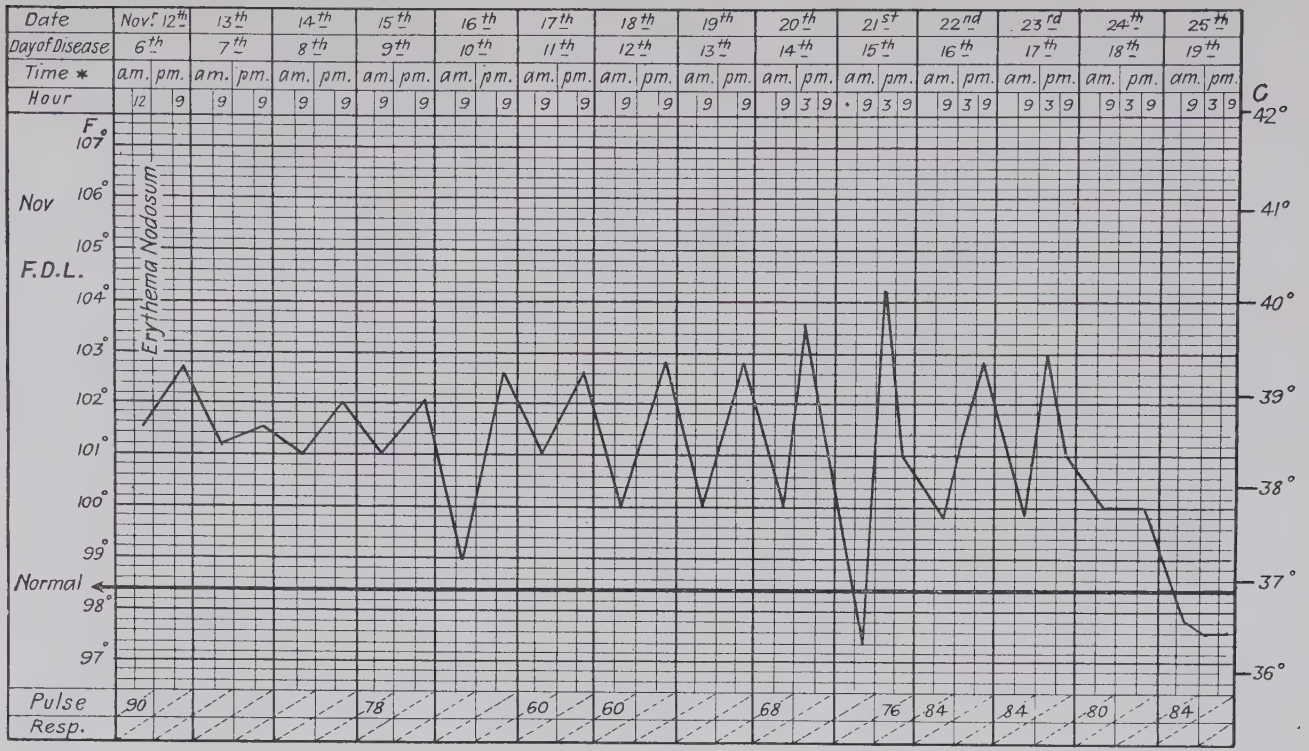
CHAPTER II

THE EVOLUTION OF THE THEORY OF INFECTIOUSNESS

I MAY perhaps be allowed to describe briefly, first of all, the manner in which the idea gradually impressed itself upon my mind that erythema nodosum was something more than a simple skin disease, such as we were always taught that it was in my student days (1874-1878).

Mild cases used to present themselves at the Out-patients' Departments of both University College and the Middlesex Hospitals, but I cannot recall having ever seen a case in the wards of either of those institutions. Such cases were easily diagnosed, and excited no great interest in teacher or student ; the statement was usually made by the former, if I recollect aright, that the disease was in some way a manifestation of the rheumatic diathesis.

In November, 1879, my attention was specially drawn to this complaint by the fact of being called upon to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42°
41°
40°
39°
38°
37°
36°
Nov
F.D.L.
Erythema Nodosum
Normal
Pulse
90
78
60
60
68
76
84
84
80
84
Resp.

CHART I.

attend a brother, who was suffering from a very severe form of it. Fuller details of his case are given elsewhere (1), but for the moment it will suffice to say that there was a fortnight's high fever (*vide* Chart I., p. 5), that on one occasion the patient had a rigor which lasted for two hours, that the rash was distributed over the whole of his body, and that his convalescence was extremely tardy.

It was not until some four years later, when I settled in practice in Adelaide in 1883, that I had any further opportunities of studying this disease. During the last twenty-one years, however, I have met with frequent instances of it, for, indeed, it is not very uncommon. In many respects the observations made upon cases occurring in my private practice have been more striking than those derived from the few cases which happened to be admitted to my wards in the Adelaide Hospital, during the time that I held the office of Honorary Physician, or from the more numerous cases that I have seen at the Children's Hospital. Nor is this at all strange, for erythema nodosum is not, so to speak, a disease of the first magnitude, and therefore is more likely to come under the care of the general practitioner than that of the consulting physician, or of the specialist in diseases of the skin, and, moreover, the family doctor is far more likely to see the case at its very commencement.

I early noticed one fact, which was this, than when I met with one case of erythema nodosum it was not improbable that I might soon again meet with others. On this fact I was not inclined to lay much stress, because it is a matter of common experience with most practitioners that cases, other than those of an infectious nature, often occur in a series, and then subsequently become conspicuous by their absence. Sometimes we have a run of cases of appendicitis, perhaps, or it may be of shingles. I also formerly suspected that erythema nodosum favoured certain suburbs of Adelaide in preference to others, but a larger experience has not corroborated this suggestion.

In 1886 a circumstance occurred the real import of which I did not at the time fully appreciate. I happened to be attending a lady about forty-five years of age who was suffering from a severe attack of erythema nodosum, accompanied by considerable fever and marked prostration ; she was confined to her bed in a room on the first-floor at the same time that her son was also being kept in bed in a room on the ground-floor on account of a suppurating bubo, the result of gonorrhœa. During the convalescence of the mother the son developed erythema nodosum ; this I merely looked upon as a curious coincidence, my mind not being prepared for the suggestion of infection.

In the following year (1887) another point attracted

my attention. I had been in attendance for several days upon a little girl, aged four years, who had a mild febrile attack. The symptoms were very vague, but on account of the prevalence at the time of typhoid fever in that particular suburb I rather inclined to a diagnosis of this nature, and when pressed by the parents for a definite opinion I somewhat too confidently asserted it. All the usual precautions for enteric fever were taken, the child being kept in bed and upon restricted diet, not only to her own disgust, but also against the inclinations of her mother. After the lapse of a week or more from the onset of her symptoms the spots of typical erythema nodosum appeared on both legs. Now, the resemblance of this prolonged period of fever and general malaise, before the eruption of the nodes, to the ordinary prodromal stage of several of the acute specific fevers struck me very forcibly. It then dawned upon my mind that there were several other points of close resemblance between erythema nodosum and the general group of acute infectious diseases, and when I recalled the consecutive cases just narrated, which occurred within a few days of one another in a mother and her son, and, further, when I recollected the long and tedious convalescence in my brother's case, the chain of evidence seemed to me to be fairly conclusive. Soon after this in one or two other cases I noticed the long incubation stage as a distinctive feature, and once more I had two cases occurring in the same family within a few days of one another. In 1890

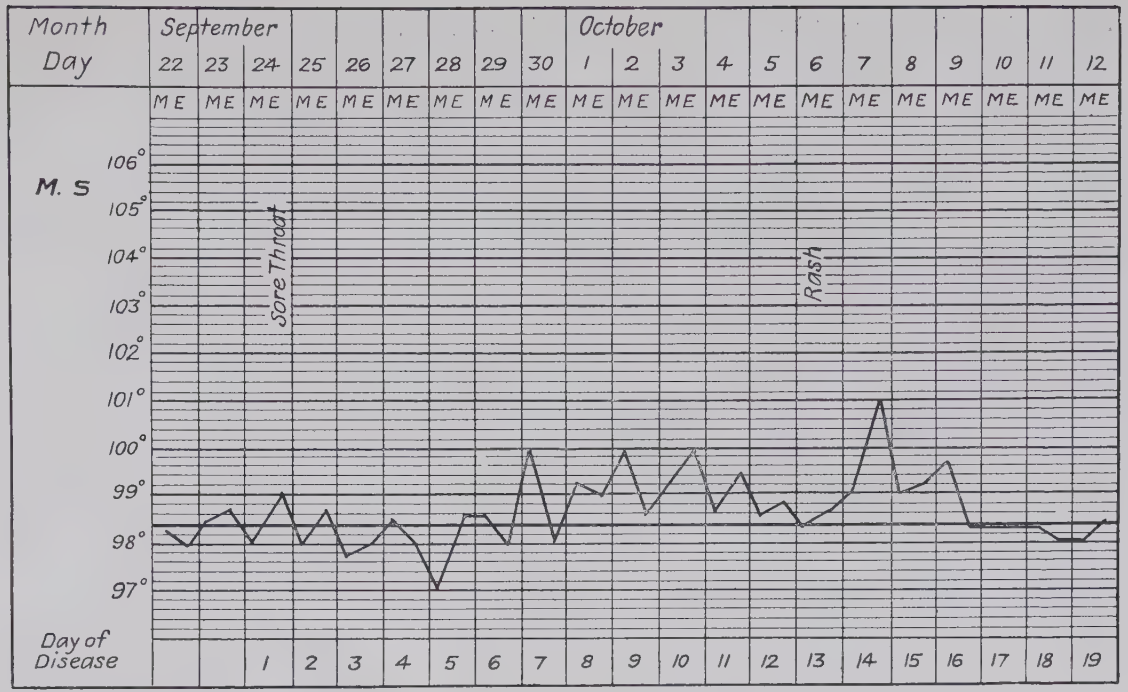
I was emboldened to write the paper already alluded to (1), which was entitled 'Erythema Nodosum, an Acute Specific Fever.' Then I drew upon a series of only fourteen cases, but the present work is based upon the notes of some sixty-three cases altogether which have come under my personal observation either in private or hospital practice. I have also made occasional reference to a few cases which have been reported to me by other practitioners or mentioned to me by the patients themselves.

CHAPTER III

THE TYPES OF NODAL FEVER

Before analyzing in detail the symptoms of the various *stages* of nodal fever, I think it would be as well to endeavour to illustrate, by cases which I have seen, some of the *types* of the disease which may be met with. We shall find these types varying in every conceivable manner, for some cases seem to expend all their energy in the prodromal stage, others are distinguished by the severity of the eruption, others, again, by a tendency to relapse, whilst some seem to be much more severe in character than usual on account of the pseudo-rheumatic complications which accompany them.

Case I. A Mild Case with Distinct Prodromal Period—Nodes on the Legs only.—Mary S., aged nine, had been an inmate of the Adelaide Children's Hospital, under the care of Dr. Swift, for over five weeks, with some tenderness of the right knee, the result, as was supposed, of a penetrating wound of the joint inflicted


Month
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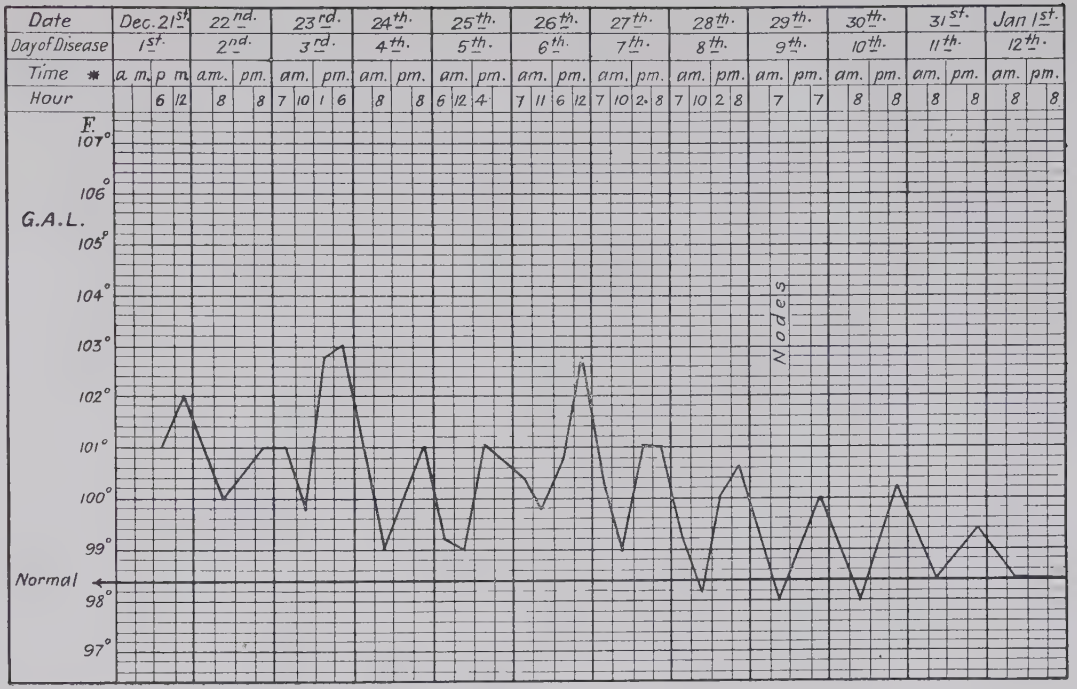
M. S
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
Sore Throat
Rash
Day of Disease
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

CHART II.

accidentally some six months before ; ever since admission her temperature had been practically normal. Scott's dressing was being applied, and the patient kept in bed.

On September 24, 1904, she complained of sore throat ; the tonsils were slightly red and swollen, but no membranous or follicular patches were to be seen ; a swab was taken, but no diphtheria bacilli found. After a few days there was a mild degree of pyrexia noticed, but when the temperature became normal again on October 6 the rash appeared. The spots were confined to the legs, and were fairly numerous, perhaps twenty or more, on each leg ; they were typical in appearance, but scarcely at all tender. The highest temperature (101°) was reached on the following day, when also the rash was at its height ; on the 9th the temperature was normal ; on the 12th the patches were fading, but they were still visible as bruises on the 19th, when she was discharged. There were no phlyctenulæ nor joint pains, and, indeed, the child seemed to be scarcely at all ill.

Case II. A Mild Case, with Severe Prodromata, but very Short Period of Eruption, the Nodes being confined to the Legs.—My eldest son (G. A. L.), aged seven, was taken ill on December 21, 1901 ; he complained of headache, and at 6 p.m. his temperature was 101°. Some salicylate of soda was prescribed, but at midnight the fever had reached 102°. Next day, the same treatment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F.
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106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
G.A.L.
Normal
Nodes

CHART III.

being continued, the temperature ranged lower, and the headache seemed to be less severe, but he now complained of pain in the upper abdomen. On the third day the temperature was for some hours 103° ; he vomited, and the medicine was discontinued ; he complained of more severe headache than before, and of pain in the neck ; he was restless, and still had abdominal pain. On the fourth day, with a much lower temperature on the whole, the symptoms remained very much the same, but on the fifth day, without any increase of fever, he was distinctly worse in his general state. There was still the pronounced group of gastric symptoms, pain and tenderness in the abdomen, with vomiting ; whilst the headache and pain in the neck had returned with greater severity. At this stage I asked the opinion of my neighbour and colleague, Dr. J. C. Verco. Without committing himself to any positive diagnosis, he discussed the possibility of hepatic inflammation, or even suppuration, whilst I personally inclined somewhat to the gloomy suggestion of tubercular meningitis ; neither of us leaned to a diagnosis of enteric fever. On the sixth day there was nothing much to record beyond that the bowels were freely opened several times as a result of the physic administered, but at midnight the temperature again ran up to nearly 103°. On the seventh and eighth days there was a decline in the fever and an amelioration of all the general symptoms. On the ninth day he seemed so much better that I allowed him to be placed on a couch in another room. Whilst he was lying there I

happened to touch his legs, whereupon he immediately complained of tenderness ; on looking, I discovered three or four nodes over each shin. Now, it is certain that they could not have been previously overlooked ; the weather was intensely hot, being our midsummer, and the child was generally lying in pyjamas on his bed, without any bed-clothes, and, moreover, was frequently stripped both for examination and for sponging. The spots remained for a few days, but did not increase in numbers ; in two days' time the feverishness had completely disappeared. His convalescence was fairly rapid.

Case III. A Mild Case, foretold on Account of Phlyctenulæ seen in the Prodromal Stage—Crops of Spots on the Arms as well as the Legs.—Edward R., aged twelve, had no distinct sign of malaise before December 15, 1897, when he was found to be febrile (101°) and to have a coated tongue ; on the following day phlyctenulæ of both eyes were observed, and a diagnosis hazarded that he might be developing nodal fever. No fresh symptoms occurred till the 19th, when a node was seen on the left shin ; on the following day there were several on both legs ; on the 22nd, in addition, there were a few observed to be scattered about the upper limbs, and one on the front of the left side of the chest. By the 28th the nodes had all attained to the stage of the bruised appearance, but on the following day a fresh crop of three appeared on the left leg. On January 1 there

were still a few fresh spots to be seen on the right leg, and one on the left; whilst these were bright and red, the older nodes were represented by bluish patches.

Case IV. A Severe Case, with Marked Pseudo-rheumatic and other Prodromata—A Copious Eruption, appearing in Crops in other Situations besides the Limbs—Phlyctenulæ—Protracted Convalescence.—Jessie B., aged eighteen, a dressmaker, found herself unable to work on the morning of July 4, 1890, on account of stiffness in the left shoulder; next day she was still unfit for work, but, being a Salvation Army lass, she assisted at an open-air evening service, and so made her 'cold' worse, coming home with a pain in the back of the left chest. This pain persisted, and on the 8th she had in addition a cough and a headache. She first consulted me on the 9th, when I prescribed an ordinary cough mixture. I have no note of the temperature, but I observed a phlyctenula of the right eye. On the 11th she became worse, and I saw her at her own home. She now complained of sore throat, but there was nothing to be seen on the fauces; she had a frequent, short, dry cough, without any physical signs in the chest; she was sent to bed; the temperature was normal. The following afternoon her temperature was found to be 100°; she complained of some stiffness in the neck, and of pain in the left shoulder; her menses had meanwhile appeared. On the 13th she was better again, the pain in the chest having

gone, but there was still some aching of the head and of the throat ; in addition she had pain over one knuckle of the left hand without any observable swelling, and a pain over the right outer ankle.

On waking up on July 14, she felt a pain in the left leg, and I found a patch of erythema nodosum, about $\frac{1}{2}$ inch in diameter, on the middle of the leg, and rather external to the shin-bone, with three or four very small spots more to the inner side ; on the right leg there were four or five slight spots. I observed other solitary spots, on the right cheek, on the left chin, along the right clavicle, and several over the back ; on examining the chest there were still no physical signs to be found. The temperature was 103°, the pulse rate 112, while the respirations were 35 to the minute. In the neck there was a very tender fulness, apparently glandular, to which the patient attributed the aching of the throat and the stiffness of the neck. On the 15th at noon the temperature was 102°, pulse 112, and respirations 30 ; the tongue was dry and glazed in the centre ; she still had headache and was constipated ; she had spent a bad night, as the neck gave her a suffocative feeling. On the left leg the large spot had doubled its size, and several fresh spots had appeared ; on the right leg there were also some fresh nodes, as well as some small papules above the patella ; another spot had appeared on the chin, and a couple on the dorsum of the left hand, and some above the left clavicle. A phlyctenule was noted

over the tendon of the left internal rectus ; the fulness in the neck persisted, but the cough was much improved. On the 16th, temperature 100°, pulse 96, respirations 28 ; the patient reported having had a better night ; the headache was less and the tongue was cleaner ; the cervical swelling was obviously glandular. On the lower limbs the nodes were three times as numerous, and confined to the antero-lateral aspects, reaching from the base of the big toe to some distance up the thigh ; the left elbow had also some tiny spots. On the 17th some general improvement was noted : the spots on the back and those along the right clavicle were clearing up, whilst those along the left collar-bone had disappeared ; the neck was no longer tender ; on the legs no fresh spots had come out, and of those still remaining there the older spots were turning purplish, whilst the recent nodes were redder and more diffused. On the 20th the characteristic bruising stage had been reached all over the legs, but a fresh phlyctenule was seen over the right external rectus. Patient meanwhile had been steadily improving, and by the 21st the temperature was normal, although a fresh spot appeared this day on the left forearm. On the 23rd she was allowed up, though she felt very weak, and when they were hanging down the legs were very painful. The neighbourhood of some of the bruise-like nodes was slightly œdematous ; on passing the finger over the nodes, they still felt hard, even when not situated over the shin-bone. On July 31 patient walked to my house, a distance of three-quarters of

a mile. The nodes were quite visible, and in some instances palpable as hard subcutaneous lumps, with crinkled and desquamating skin over them ; four weeks later the site of some of the nodes was still to be made out by sight and touch. There was marked debility for a considerable time.

Case V. A Severe Case, with Marked Prodromata and Pronounced Pseudo-rheumatic Complications — Phlyctenulæ — Family Predisposition. — M. W., aged twenty-two, a dressmaker, said that she had not been in good health for a year, but that she had never had rheumatic fever or any other definite illness. She was taken ill on November 17, 1896, but it was not until the 22nd that, feeling so much worse, she consulted a doctor. Meanwhile she continued her work, though not feeling fit to do it ; with medicine she improved, but again was very ill on the 29th and 30th. On December 2 she felt pains in some of her joints, and on the 5th she discovered some spots on both legs.

I saw her first on December 6, when, in addition to the nodes on the legs, some large and others small, I observed a phlyctenula on the inner side of the left eye ; her temperature at noon was normal. In bygone years I had attended two of her sisters with the same complaint ; she told me that a third sister had also had it, and that a cousin had suffered from it.

On December 8 her temperature was 100°; there were many more spots all over the arms and legs, and the individual spots had increased in size; there were also a few spots on the face. She complained of considerable pain in the joints, but I could make out no effusion into any of them. On the 16th the spots were mostly fading, although a few fresh nodes were thought to have come out over the shins on the two previous days; her temperature was 101°; she was still confined to her bed; the tongue was dirty; there was no appetite, and the bowels were constipated. Her chief complaint now was of the pain in the joints, and her wrists were especially bad; the swelling was situated both over the joints and beyond their limits; moving the wrists or jarring them in any way was very painful, and they were very tender to the touch. The knees were also tender and painful, but here I could positively say that there was no appreciable synovial effusion; in the case of the elbows I could not so easily disprove it. In the case of the wrists I believed the swelling to be teno-synovial, in consequence of its extension beyond the real limits of the wrist-joint. There was no cardiac murmur nor dyspnœa. Treatment by salicylate of soda did absolutely no good; her convalescence was tedious.

Case VI. A Case illustrating the Relapsing Type of the Disease—Pseudo-rheumatism—Phlyctenulæ.—Mrs. H., aged thirty-four, a native of South Australia,

consulted me on December 1, 1898. There was a parental history of gout, and she herself confessed to hysteria ; she complained of occipital neuralgia, which improved under a course of salicylate of soda. On the 12th she had muscular pains in all her limbs ; on the 31st she complained of pain, stiffness, and swelling about many of her joints, the knees, elbows, wrists, and ankles, but in none of them could I detect any synovial effusion ; there was no fever. On January 5, 1889, the first node was found, and there was slight pyrexia ; she now kept her bed for a few days. By the 9th there were several spots on both legs and phlyctenulæ of both eyes ; on the next day a papule appeared on the left forearm ; some of these nodes were so pale in tint as to be almost colourless at first, and at the same time the older spots were already becoming bruised in appearance. Subsequently many spots came out, both singly and in crops, on all the limbs, and above as well as below the knees, and upon as well as below the elbows. Meanwhile the fever was quite insignificant, although the arthritic symptoms persisted.

On February 7, nearly five weeks after the first appearance of the eruption, nodes were still to be felt and seen, the recent spots of a faint red tinge, whilst the older patches were like faint bruises, but all much better demonstrated when the legs had been dependent for a short time ; in addition, still older nodes could be made out as sessile, hard, subcutaneous lumps. The ankles

were said to swell somewhat, but there was no fluid in any of the joints.

It was noted on March 3 that with tonics she was regaining her strength, but two fresh spots appeared on the following day on the left leg, and traces of others were to be felt on the right. On March 23 fresh spots were still coming out, several on the left leg, and only one on the right. She stated that she felt depressed and queer a day or two before any new crop appeared. There was some swelling still about the ankles, but it seemed to me to be more in the sheaths of the tendons than in the joints ; there was no pain in walking, only a numb and tired feeling. On April 17 there was noted a fresh crop on both legs, and some swelling of the left ankle, but the general health was good and there was no fever. On May 3 another crop was seen. The patient had not been losing weight all this time.

A month later she left the colony for South Africa. Writing to me on August 4, she said that, although she felt much better than when she left Adelaide, the lumps were still continually coming and going on both legs ; she suffered very much from them at times, and could scarcely bear to touch the legs, for they seemed so bruised and tender. On January 9, 1900, a year after the rash first appeared, I heard from her again ; she wrote in a hopeful strain that she thought that she had seen the last

of her erythema nodosum, as the last traces had disappeared just two weeks before the date of writing.

Case VII. A Severe Case, with a Second Attack Eighteen Months later — Cardiac Murmur. — A district nurse, aged twenty-nine, had been performing her arduous duties for two years; she was robust in appearance, but rather pale. During the last quarter of the year 1902 she had felt languid and lost her appetite; during the month of December her indisposition seemed to be aggravated. From the 10th to the 19th of that month she had general malaise, with pains in her limbs, which felt sore when they were touched; from the 19th to the 21st she had tonsillitis, with a temperature ranging as high as 102°, white spots on the left side of the throat, stiffness of the neck, and swelling of the lymphatic glands. The menses were not interrupted; the bowels were very constipated; when the throat had improved, she still felt weak and unable to get about her work properly. On the 21st she felt a hardness in the right calf; next day there was a red, inflamed patch, 'like a big boil without a head,' as large as a half-crown. The swelling became less, but the redness more diffused, and smaller spots formed round it some days later. On the 24th on the left leg, just below the knee, and on the 25th on the right thigh, other large patches appeared; subsequently nodes came out all over the legs, and tiny spots also surrounded the patch below the left knee. The nodes

were very tender and painful on standing, but the pain was eased on lying down ; there were slight 'rheumaticky' pains in the left elbow and forearm, but no nodes were observed on the upper limbs. On December 26 she gave up work, but did not absolutely take to her bed. She consulted a doctor on only one occasion.

When I first saw her on January 7, 1903, the three classes of nodes were still very obvious—viz., the large blotches, the small papular satellites, and the nodes as more ordinarily recognised ; her temperature was only about 100° ; the urine was normal, and of specific gravity 1010 ; there was no affection of the cardiac valves. On the 19th the nodes exhibited all the various stages of fading, bruising, desquamation, and of colourless thickening ; on the 27th she was still anæmic, but much better in her general health.

Nurse M. resumed her work in January, 1903, and about this time changed her residence. In May, 1904, she again began to ail ; on June 7 she had a rigor, and thought that she was contracting influenza ; her throat was sore and red, but there were no spots visible. On the 12th, to her surprise, nodes appeared on both legs, and from that date to the 30th spots came out in crops affecting all the limbs ; there were also phlyctenulæ. Pseudo-rheumatism was also well marked, especially in the muscles of the right arm, but there was no effusion

into the joints. There was a very distinct soft murmur, audible all over the præcordia, but not conducted either towards the right shoulder or to the left axilla. The pains ceased on July 18, and next day I could hear no murmur. She left town for a holiday, and a week later a solitary spot came out on the left ankle. On September 29, on her return, I examined her heart carefully; there was a systolic murmur, not always audible, but only with about every fourth inspiration, not conducted at all, and chiefly heard along the sternum. She still seemed to have some neuritis about the right upper arm.

CHAPTER IV

THE DIFFERENT STAGES OF NODAL FEVER

A. THE PRODROMAL STAGE.

It has long been known that an attack of erythema nodosum is almost invariably preceded by a prodromal period of illness, but sufficient stress has not been laid upon the importance of the prodromata, and certainly very little weight appears to have been attached to them as evidence of the true nature of the disease. I have already narrated the case (p. 7) which originally impressed this upon my mind.

I find, on reading over the notes of cases occurring in my private practice, that out of forty-four cases of nodal fever there is no mention of any prodromal symptoms in *seven* instances, but I should not like to state positively that they were actually absent, because in some of the earlier cases the notes were somewhat casually recorded. In the remaining thirty-seven cases the

prodromata were more or less well marked; indeed, in fifteen instances they were sufficiently severe to require medical advice prior to the appearance of the rash, though in only one case was I correct in my surmise as to the nature of the disease that was coming on (Case III.). In one instance, as before mentioned (p. 8), I was inclined to a diagnosis of typhoid fever; on three occasions I thought it was rheumatism. Anæmia, tonsillitis, parotiditis, gonorrhœa, and dyspepsia were the leading symptoms in five individual cases, whilst in Case II. both meningitis and hepatic suppuration were considered to be possibilities. One patient gravely attributed his illness to a sunstroke contracted six months previously. Amongst the cases not seen prior to the eruption, I find that the early symptoms were attributed by the patients or their friends in four instances to rheumatism, in four more to influenza, in one case to anæmia, and in one other to inflammation of the lungs. The remainder of the patients when questioned seemed satisfied to 'lay the flattering unction to their souls' that they had caught cold. Of cases seen in hospital practice, nineteen in number, no notes are forthcoming of eight cases, but of the remainder prodromata are mentioned in all.

As regards the duration of these prodromal symptoms, when I came to inquire into them more particularly, I found that this period ranged within rather wide limits,

where the initial symptoms were at all definite in character. Thus, in

Case	III. (p. 15)	the prodromata lasted for	4	days
„	II. (p. 12)	„ „	8	„
„	IV. (p. 16)	„ „	10	„
„	I. (p. 10)	„ „	12	„
„	VII. (p. 23)	„ „	12	„
	On the second occasion	„ „	5	„
Case	V. (p. 19)	„ „	18	„
„	VI. (p. 20)	„ „	25	„

Now, in cases where these prodromal symptoms were well marked I found that, although this incubation period was so variable in its apparent duration, there was frequently a well-marked exacerbation both of the temperature and of the other general symptoms on the third or fourth day before the rash appeared. Thus, G. A. L. (Case II.) was distinctly worse on the sixth day of his illness, and the rash came out on the ninth day; J. B. (Case IV.) was taken ill on July 4, on the 11th she felt worse, and on the 14th her nodes appeared; M. W. (Case V.) had an exacerbation on December 2, the spots appeared on the 5th; another case (A. M.), though feeling ill, kept on teaching her school till November 12, and the eruption was first noticed on the 15th; and many other cases might be quoted. These cases may perhaps serve to explain why it is that in some instances we are told that the prodromal period is but a brief one, for in them the incubation period is attended by slight ailments which are scarcely noticed, and then the illness is supposed to commence

from what we may term the date of invasion, as distinguished from the period of incubation. An instance of this is the case of K. R., whose eruption appeared on the fourth day after a supposed bilious attack.

These separate stages of incubation and of invasion are fairly definite in a certain proportion of cases, and, as we have already shown, they call for medical advice in one out of every three cases. But there is even a prior stage of vague indisposition, of indefinite duration, which is occasionally mentioned by the patients. Thus, C. T. had loss of appetite persisting after influenza for eleven days before the definite malaise of the incubation stage was noticed ; Mrs. H. (Case VI.), whose incubation stage I have given somewhat tentatively as twenty-five days, might equally fairly be said to have had rheumatism for a whole month, off and on, and to have had only a short prodromal period of about five days ; B. W., again, was said to have had rheumatism for some six weeks prior to the eruption ; Nurse M. (Case VII.) complained of languor and loss of appetite for two months, then had a well-defined incubation stage of nine days, followed by an invasion stage lasting three days, and a year and a half later she was ailing again for some time before definite prodromata, ushered in by a rigor, announced the commencement of the second attack ; for three months Miss H. had vague ' rheumatism,' but did not give up her work ; Miss G. continued to teach, though she was

dyspeptic and neurasthenic for six months; Miss W. (Case V.) had not been in good health for a whole year. At least five out of forty-four cases consulted me in this early stage, but their ailments were so varied that one can only suggest that indifferent health arising from various causes may predispose a patient to contract nodal fever.

With respect to the pyrexia accompanying this prodromal stage, I must refer to the charts of Cases I. and II., which are the only complete specimens I possess for this particular period. In Case I. the premonitory symptoms were very slight, and the fever correspondingly mild; sore throat was complained of on September 24, but the temperature was not raised till the 30th; it then ranged between 98° and 100° for four days, gradually declining again to normal on October 6, the very day that the rash appeared. Case II. was a great contrast to this, for, whilst the rash turned out to be very insignificant, the fever of the prodromal stages was much more severe than in Case I., and the general symptoms were even alarming. The fever was continuous, higher at night than in the morning, and there was a distinct exacerbation on the third day before the eruption occurred.

When we come to analyze the various symptoms manifested during the prodromal stage, we find that most of them are such as are frequently met with in other

diseases of an acute febrile character, though some of them have been supposed, incorrectly as I think, to throw light upon the etiological relations of nodal fever. There is only one which I can look upon as possessing any pathognomonic value, and attention was drawn to this a few years ago by Dr. L. W. Bickle (3), then of Mount Barker, in this State; this symptom is the characteristic phlyctenula of the conjunctiva. With the high temperature we naturally find an increase in the pulse-rate; on the other hand, we seldom, in my experience, find any marked acceleration of the breathing. An exception to this rule occurred in Case IV., where we had to deal with some bronchial catarrh as a complication. The disturbance of the digestive apparatus is more marked; there is frequently anorexia with thirst, and the tongue becomes dirty, though it often remains clean for a time; constipation is the rule—indeed, I have no note of any case attended with diarrhœa; vomiting, sometimes attended with abdominal pain, is of fairly frequent occurrence, and, as in Case II. (p. 12), may considerably embarrass the diagnosis. The skin is usually dry, there is a feeling of general malaise, and sometimes slight shivers, or even a definite rigor, may serve to indicate the onset of the incubation stage; headache is very constant, sometimes with pains over the eyes, sometimes with occipital neuralgia, and sometimes with vertigo, and at other times the head is sore. This general malaise and feverishness are frequently attended by pains all

over the body; these pains are sometimes in the chest, sometimes in the back, sometimes in the sides; occasionally they are increased by a deep respiration. Sometimes they are seated in the neck and attended by slight stiffness; frequently they are complained of in the limbs and accompanied by cramps. It is owing to the presence of these vague general pains that this prodromal stage is not unfrequently mistaken by the patients for an attack of influenza; but when, as in many instances, the pains are chiefly complained of in the joints or their neighbourhood, then a diagnosis of rheumatism is not unnaturally indulged in. I have paid particular attention to this pseudo-rheumatism; but although I have met with pain, swelling, and tenderness of the joints, I have never been able to satisfy myself as to the existence of fluid in the synovial cavity. The arthritis is sometimes multiple, sometimes single, often asymmetrical, and sometimes fairly universal. I have mentioned that the chief prodromal sign in one case was a subacute inflammation of the right parotid gland; the residual hardness from this inflammation had not subsided when the nodes were well in evidence. Another symptom much relied upon by those who support the theory of a rheumatic diathesis in erythema nodosum is acute tonsillitis. I find mention of sore throat in about one-sixth of my cases. In one instance there was nothing visible, and in another case it is described as neuralgia of the throat; in the third case the sore throat was mild in character; in the fourth

the throat was sore when swallowing was performed, and this lasted for six days ; in the fifth case there were white spots seen on one tonsil only by the patient (Case VII.), who also noticed enlargement of the glands of the neck and some stiffness, and in her second attack also complained of her throat, which was only red ; in the remaining case I attended the patient for several days with what seemed to be an ordinary attack of acute follicular tonsillitis, which proved, however, to be very rebellious to treatment by salicylate of soda. In some of the remaining cases there was nothing to distinguish the symptoms from those attributable to dyspepsia, or to anæmia, attended with mild pyrexia.

The only really pathognomonic symptom, as I have before stated, is the presence of conjunctival phlyctenulæ—these will be described more particularly later on ; here it will suffice to repeat that in one instance (Case III.) their appearance emboldened me to diagnose nodal fever. I find that they were noted prior to the rash in three cases, and that they appeared respectively on the fifth, third, and second days before the eruption ; that once they were seen on the same day ; whilst in a fifth case the eyes were said to have been inflamed and irritated, and in the sixth case the patient, herself a medical student, noticed conjunctivitis.

B. THE STAGE OF ERUPTION.

The eruption usually appears first on the legs ; in no instance was it absent from the lower extremities. In thirty-six cases out of sixty-three collected from my private practice and from hospital cases, it would appear to have been limited in distribution to the lower limbs, and in seven of these cases it was found above as well as below the knee. In the remaining twenty-seven cases the eruption was found on other parts of the body than the lower limbs, the next most frequent site being the upper limbs, where it was found in twenty-three instances, and then much more often below than above the elbow ; on the head and neck it was noticed nine times, and on the trunk in three cases. In no instance was only one leg affected. It was never noticed on the arms before it appeared on the legs, but in one case it was observed on the face first.

In degree of copiousness the eruption varies immensely. There may be no more than three or four spots on each leg (as in Case II.), but, on the other hand, there may be (for I have counted them) as many as forty or fifty at least on each leg, the nodes varying in dimensions from the size of a threepenny piece to an area with a diameter of 3 inches or more. When the rash is strongly developed on the legs, it may be looked for elsewhere, and the

copiousness of the rash on the lower limbs may be taken as an index generally to the severity of the attack; for we do not find the rash copious elsewhere, and scanty on the lower limbs. On the other hand, with a copious rash the fever and general symptoms are not always proportionately severe.

On the legs as well as on the arms there is a tendency for the nodes to be arranged in vertical lines, rather than in bands encircling the limbs. The extensor aspects of the limbs are undoubtedly more favourite sites for the nodes than the flexor, but the relationship of the nodes to the subcutaneous bony surfaces has, I think, been too strongly insisted upon; they are in no sense, of course, periosteal lesions, and I have pointed out many a time nodes seated on the outer aspects of the legs, quite free of the edges of the tibiæ. When few in number they affect more often the extensor aspects; when very numerous they appear on every aspect of the limb. In one or two instances on the face and trunk there has seemed to be a tendency for the spots to be arranged where subcutaneous bony surfaces exist—*e.g.*, the forehead, the cheek-bones, the lower jaws, the clavicles, acromial processes—but they also are found on the eyelids and the neck, though seldom on the abdominal walls or the mammæ.

I am accustomed to distinguish three chief types of spots, which are often all present at the same time in the same subject. In the first place, there are the well-known

nodes (erythema nodosum), of oval form, well raised above the general surface of the skin, with well-defined outline, and ranging in their long diameter from $\frac{1}{2}$ inch to 3 inches, or even more. As a rule their axes are parallel to that of the limb, but they may be more or less oblique in direction, though I have never seen them actually transverse. In the milder cases they may be the only spots observed, and their oval shape is always more obvious on the limbs than elsewhere ; they are just as often found external to the shin as over the bone or internal to it. Equally large and prominent blotches of inflammation are often seen on the lower limbs, but of less pronounced oval shape than the typical nodes, side by side with which they may be found; they seem to affect the neighbourhood of the knee-joints especially. The third type is that of small round raised spots (erythema papulatum and tuberculatum), varying from the size of a pea to that of a shilling ; these smaller spots are often ranged, as it were, like satellites in the neighbourhood of the typical nodes or of the larger blotches, and in such cases they may make their appearance later than the original nodes or blotches, as in Case VII. ; they may also be found along the situations of tendons, or over the knuckles, but their especial sites are the body, head, or face. Occasionally, but much less frequently, we see the rings of erythema iris (vel annulare, vel gyratum).

Transition forms are seen which prove these various

PLATE I.

CASE OF KATE R.

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Helen de Reyher, *del. et pinxt.*

types of eruption to be merely morphological and not pathological varieties; there is no essential difference between them; they run precisely the same course, and in the fading stage are much less distinguishable.

At their first appearance the spots have all of them a red colour; the colour is that of an acute inflammation of the skin, but the degree of redness or brightness varies from quite a pale pink (Case VI.) to a bright scarlet. Less variable is the degree of hardness due to the infiltration of the subcutaneous tissues of the inflamed area. For a day or two the redness usually deepens, but at the same time the edge of the spot or node becomes rather less well defined in its outline, owing to the redness spreading. The infiltration does not tend to spread to the same extent, for whilst neighbouring spots may appear to have coalesced at their margins, the interval between them may still be quite obvious to the touch. About the third or fourth day the redness becomes dulled and acquires a tinge of purple; from this time onward the node goes through kaleidoscopic changes, until at the end of a week or ten days, perhaps, it looks more like a bruise (dermatitis contusiformis). In severe cases this resemblance to a bruise is extremely well marked; when F. D. L. was recovering he looked as if he had been thrashed all over his body with a cudgel. In milder cases, on the other hand, these tints are less obvious and less purple—more, indeed, of a lemon colour; the nodes also seem to run their

course more quickly. When the bruises seem almost to have disappeared, if the vascularity of the part be increased, as by hanging down the limb, the nodes often become much more obvious again.

With the fading of their colour one might expect rapid absorption of the subcutaneous infiltration; but this is not the case, for the nodes can be felt long after they cease to be visible, and they are still tender when pressed upon. In Case IV. the sites of the former nodes could be made out thirty-eight days after the last spot had appeared. To show how conspicuous these nodes may be, in one case, that of a lad at school, the teacher noticed the lumps through his stockings.

The nodes are both painful and tender to the touch. In one instance (Case IV.) the patient on awaking noticed that her legs were painful, and on inspecting them discovered the lumps; but it is remarkable how little pain, comparatively speaking, is associated with the nodes so long as the patient remains in the recumbent position. Tenderness on being touched, however, is a much more constant feature than any spontaneous pain; it dates from the first appearance of the rash, and persists till a long time after the spots have ceased to be visible. The only instance I can recall of the patient stating that the nodes were not at all tender is that of Case I., which was very mild in character. The pain is of a dull aching

PLATE II

CASE OF KATE R

To face page 38.

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Helen de Reyher, *del. et pinxt.*

character, and is much increased by anything which increases the amount of blood in the limb, such as standing or walking. Itching is seldom complained of much. Crinkling of the skin and branny desquamation are often seen, especially in the severe cases, when the eruption is on the wane.

The nodes themselves never suppurate, but in two instances I have noted the association of a pustular outbreak.

The spots do not all appear at once ; fresh nodes were observed to come out on the seventh, tenth, and thirteenth days respectively after the first appearance of the rash in some of my cases. Hence, spots may be noticed at the same time in all the different stages of evolution or of resolution. Whilst this is the more usual course for the rash to take, there are exceptional cases where all the spots seem to disappear and the patient to become quite convalescent, and then subsequently a fresh crop will appear. Thus, Mary McM. was admitted into the Adelaide Children's Hospital on March 23, 1897 ; on the 25th all the nodes had disappeared, and she was discharged on the 28th ; on April 3 a fresh crop appeared ; on the 6th she was readmitted, and she remained in the institution for over a month. A similar relapse occurred in B. B.'s case, there being an interval of twelve days between the appearance of the original spots and the onset of the

eruption of the relapse. In the case of Leslie C. the interval was twenty-five days, the lad going to school in the meantime. The case of Mrs. H. has been fully reported (Case VI.); here fresh crops of spots were seen as long as twelve months after the original erythema nodosum commenced, but the later attacks were generally unattended by febrile manifestations.

The accompanying charts (Nos. IV. and V.) serve well to illustrate the pyrexia which attends the eruptive stage of nodal fever in severe cases with a copious rash, and they have this additional merit, that practically in neither case was the natural course of the temperature interfered with by the administration of antipyretic drugs. K. R.'s (No. IV.) gives only the morning and evening temperatures, but it shows a continuous fever, higher at night-time, lasting for three weeks (April 5 to 26); the nodes continued to appear for eleven days—viz., from the 8th to the 18th. There were slight remissions just before the appearance of the first node on the 8th, and again before some fresh spots appeared, after a lull, on the 16th. After touching 104° on the very day that the last node came out, the 18th, the fever ended by a gentle lysis, which was spread out over eight days. C. T.'s (No. V.) is also instructive, as it shows the four-hour temperatures; the degree of pyrexia was hardly so great as in K. R.'s case, but the eruptive stage was more prolonged, as the last node appeared twenty-one days after the first. The chart shows

PLATE III.

CASE OF KATE R.

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Johnstone & Jones, Lith. Edinburgh.

Helen de Reyher, *del. et pinxt.*

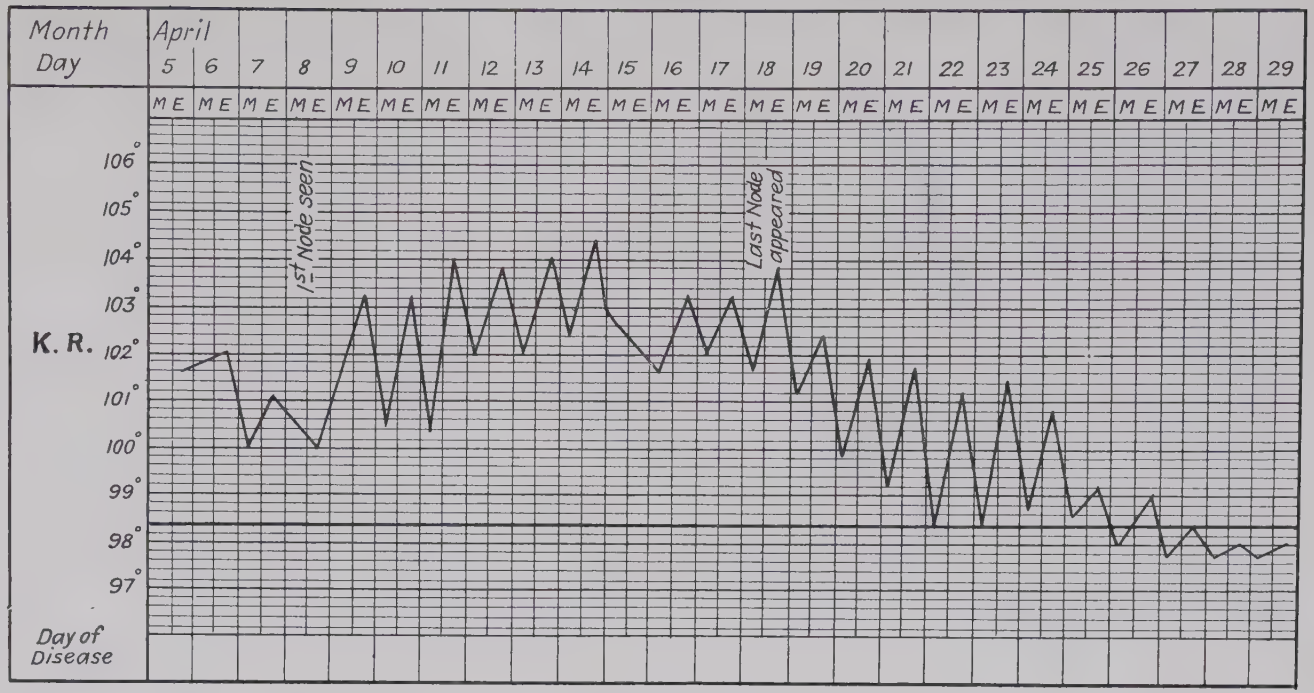
Month
Day
April
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E M E
106°
105°
104°
103°
K. R.
102°
101°
100°
99°
98°
97°
1st Node seen
Last Node appeared
Day of Disease

CHART IV.

more frequent remissions and occasional intermissions, always heralding the appearance of fresh crops ; the lysis was not so distinct. Chart I. (p. 5) may also be referred to in this connection, but in this case the rash appeared practically in one crop. In Case II. the fever was mild during the stage of eruption as compared with the stage of incubation, but here the rash was quite insignificant, and only appeared when the child seemed almost convalescent. Case I. is a specimen of a still milder fever, although the eruption was more pronounced than in Case II. In Case IV. the maximum temperature was reached soon after the appearance of the eruption.

As regards the general symptoms, these are mild or severe in direct ratio, usually, to the mildness or severity of the rash and of the accompanying fever. They are symptoms such as we may meet with in any febrile illness, and they do not differ materially from those noticed in the prodromal stage. As a rule, in spite of a moderately high temperature, the patient does not strike one as looking particularly ill ; there may be headache, which increases in severity at night-time, but the patient can usually sleep. The digestive organs work fairly well, and the tongue may remain almost clean, but constipation is a frequent trouble. Patients often grumble when kept in bed, even though they may still be feverish, and fresh spots may be coming out. In an uncomplicated case it is no exaggeration to say that the general symp-

PLATE IV.

CASE OF KATE R.

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W. & A. K. Johnston, Ltd., Edinburgh.

Helen de Reyher, *del. et pinxt.*

toms are often less severe during the course of the eruption than they were during the prodromal stage.

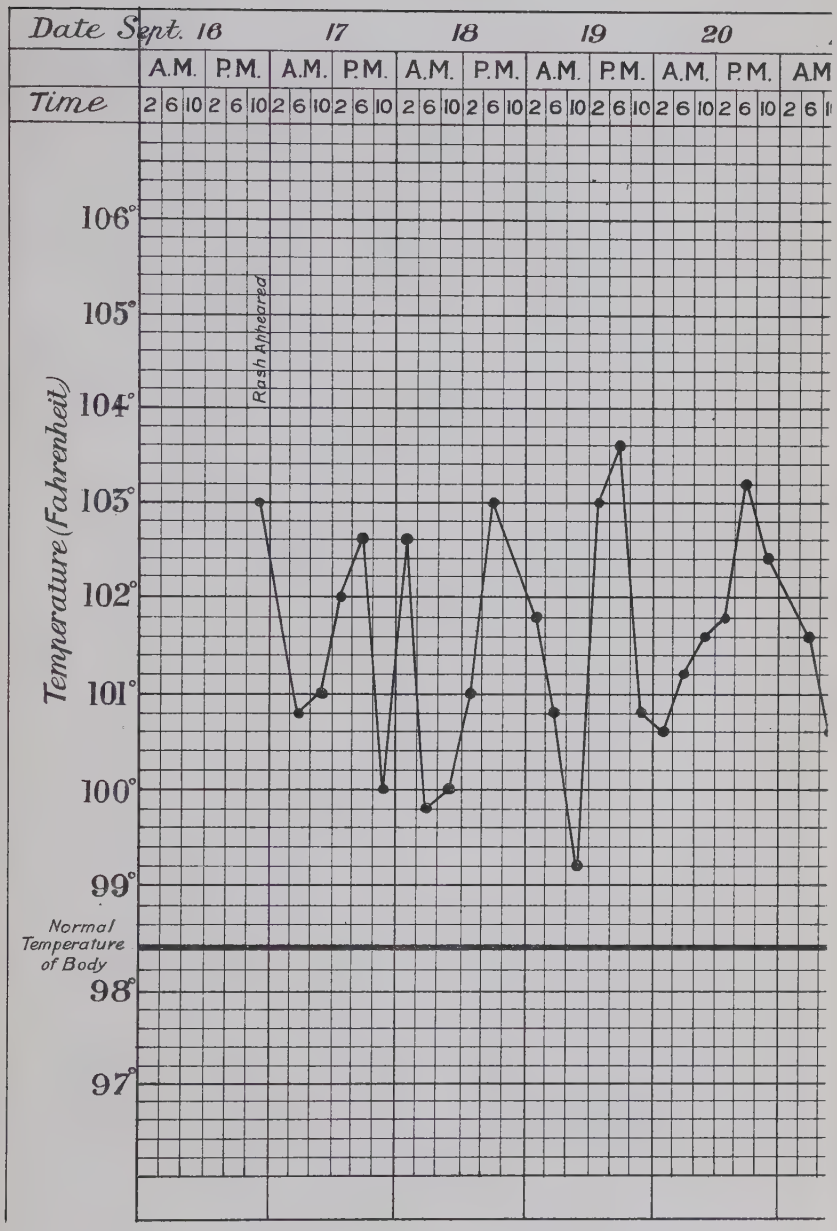
Some occasional symptoms of the eruptive period, however, require more minute study. In the first place there are the ocular signs. Phlyctenulæ were mentioned as occurring with some frequency during the prodromal stage (in about 10 per cent. of the cases), but their occurrence is far more frequent during the eruptive stage ; they were noted as being present in seventeen out of forty-four cases, but, as the notes of some of the earlier cases are very imperfect, it is highly probable that their frequency is greater than as above-stated—viz., 38 per cent. I believe these phlyctenulæ to be merely the eruption modified by its appearance on a mucous membrane. At the same time I must admit that, when I showed an example of them to a colleague of mine, Dr. M. J. Symons, he was unable to detect any difference in them from the ordinary variety of conjunctival phlyctenulæ. Their usual situation is over the insertion of the tendons of either the internal or external recti muscles, near to the corneal margin ; there may be only one such phlyctenule present, or there may be two, three, or four. They may come out independently of each other, and perhaps more often do so; there is the usual leash of vessels, like a comet's tail, stretching to the periphery of the globe. These phlyctenulæ do not, as a rule, give rise to much inconvenience, and are usually noticed by the onlooker

rather than complained of by the patient. Associated with them in two instances were similar spots on the margins of the lower lids, with a leash of vessels running down to the bottom of the conjunctival sac.

The pseudo-rheumatic phenomena of the stage of eruption are sometimes very marked. In Case IV., where they were very evident during the prodromal period, they were wanting, except for a slightly stiff neck, during the stage of eruption ; in Case V. they were very marked during the eruptive stage ; in A. M. they improved when the nodes appeared.

There is mention of some form of pseudo-rheumatism in sixteen out of forty-four cases during the eruptive period. In four of these cases the symptoms were but slight, being in three instances merely the remnants of prodromal pains, but in the remaining twelve cases they were well marked. Case V. was a good example of it ; she was laid up in bed for some time, and the arthritic symptoms bore certainly a very striking resemblance to acute rheumatism, but where there happened to be any swelling I came to the conclusion that it was teno-synovial. In B. B.'s case there was polyarthritis without effusion, except about one ankle ; she was not laid up. In Case VI. there were joint pains without effusion, and in Mrs. D.'s case the same condition. Neither Miss S. nor Miss G. was laid up, and the former did not consult me till the

Clara T.....1902.



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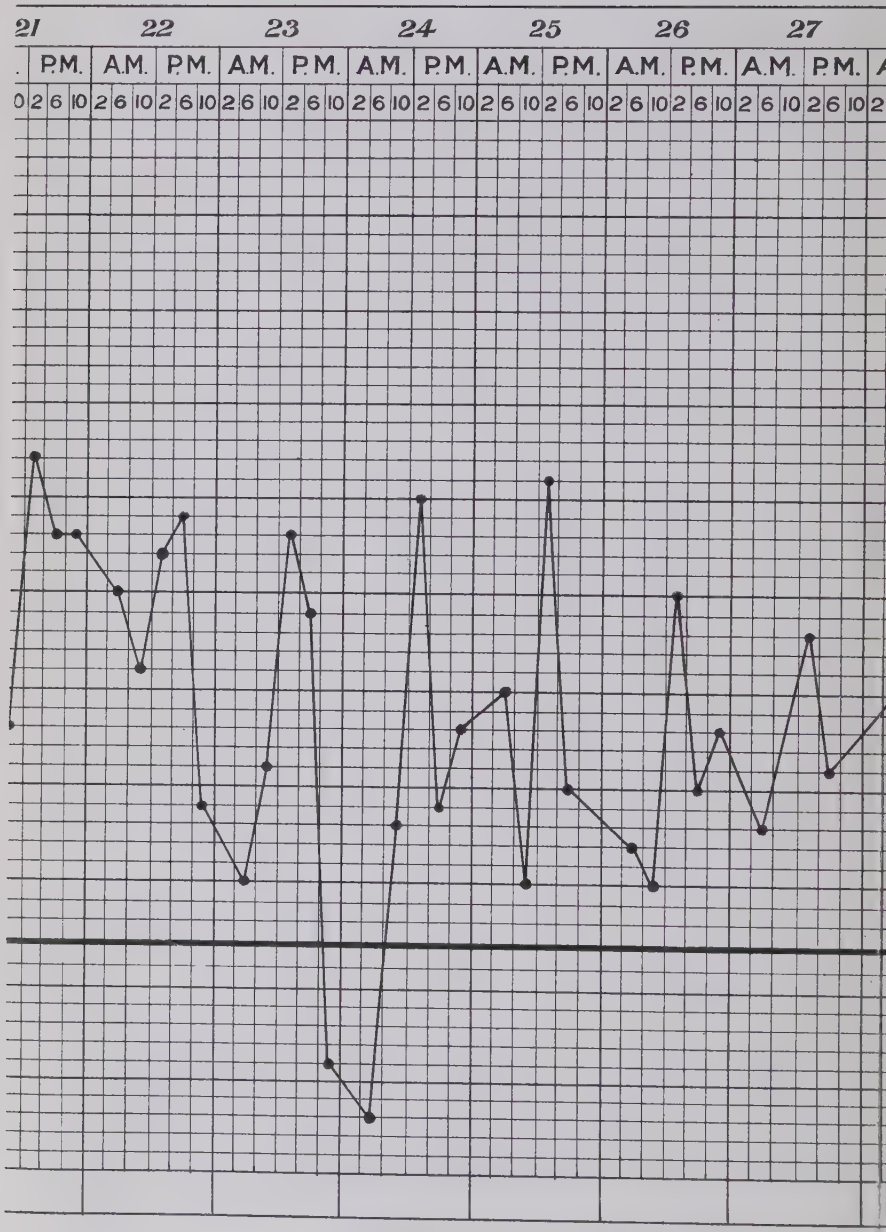
21
22
23
24
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26
27
P.M.
A.M.
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P.M.
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A.M.
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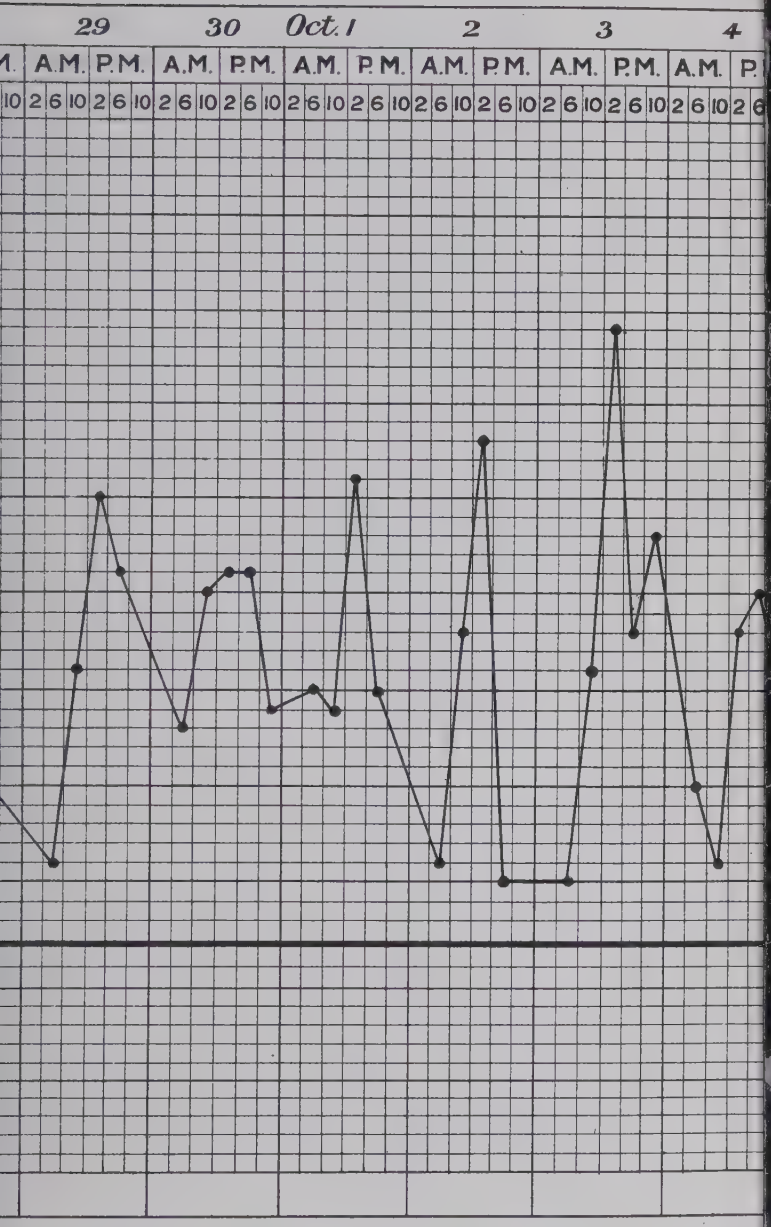
0 2 6 10 2

PLATE V.


29
30
Oct. 1
2
3
4
A.M.
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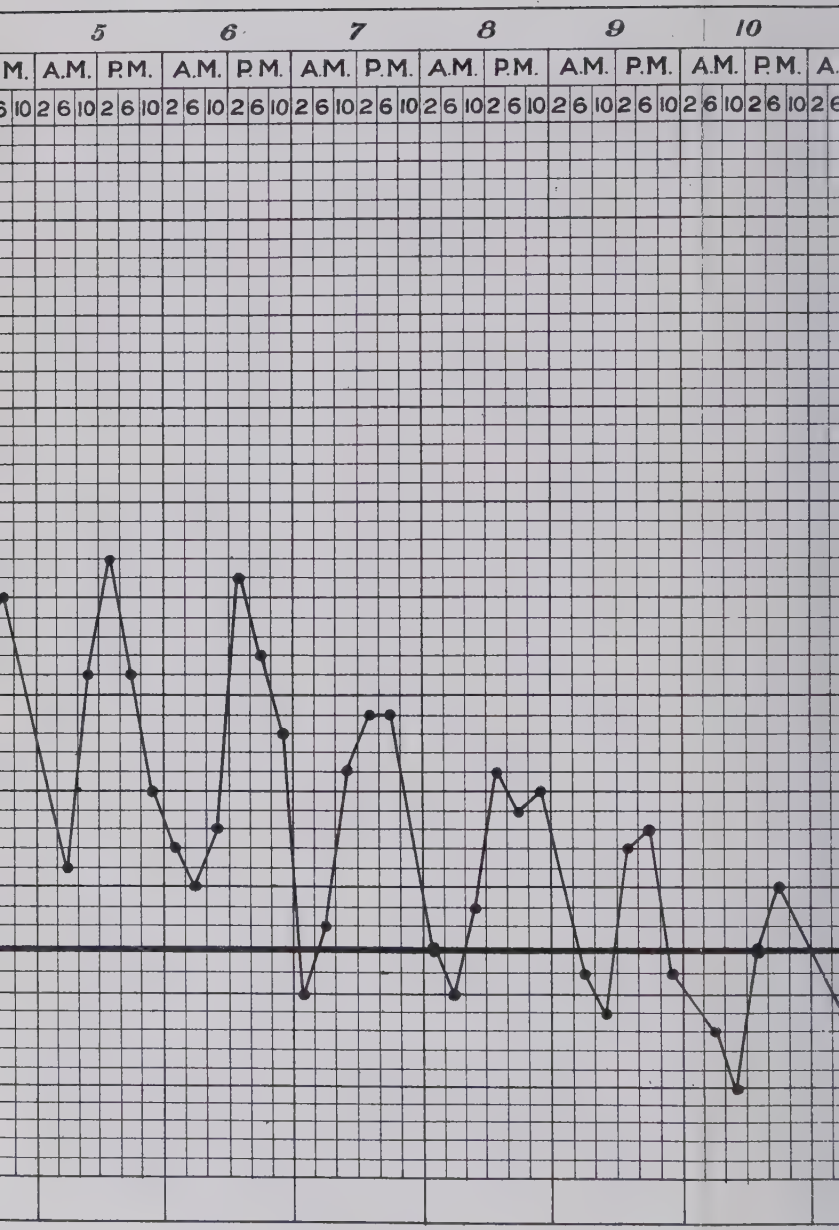
10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6 10 2 6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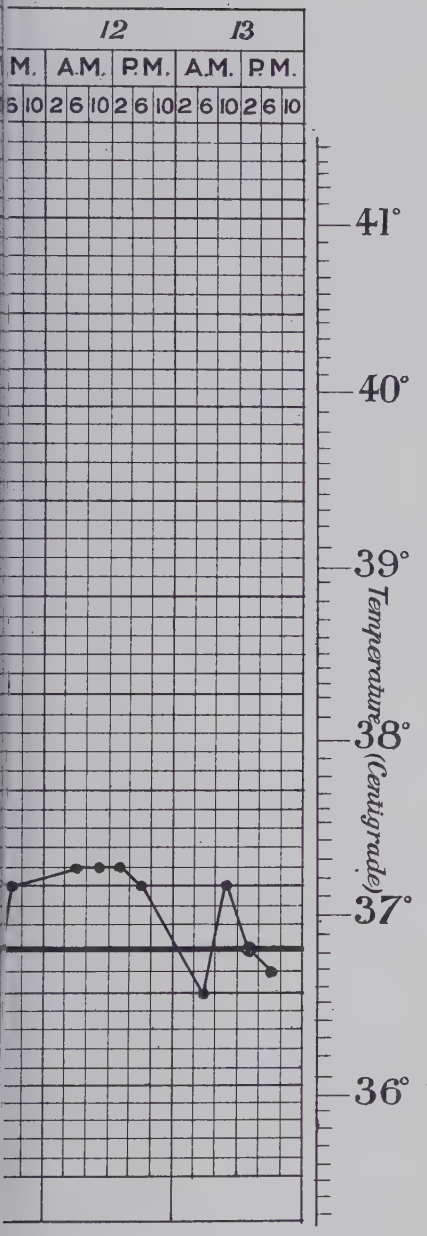
A.M.
P.M.
2
6
10


12
13
M.
A.M.
P.M.
A.M.
P.M.
5 10 2 6 10 2 6 10 2 6 10 2 6 10
41°
40°
39°
38°
37°
36°
Temperature (Centigrade)

nodes were fading. In Miss B. S.'s case it was noted that, while she complained of stiffness and aching pains in the wrists and knees, there was no redness nor other sign of inflammation in the joints, passive movements of which were quite free and painless, and, moreover, the pain seemed to be superficial to the joints. Mrs. K. seemed to me to have effusion in several of her joints. Nurse M. distinctly thought that her pains were muscular rather than articular. In none of my cases was I able to detect any endocardial murmur or pericardial rub. In my first case (p. 10) there was a hæmic murmur at the base during the height of the fever, but it left no trace subsequently; in my last case (Case VII.), there was a distinct soft murmur heard all over the præcordia; four months later all I could hear was a murmur audible about every fourth beat at the end of an inspiration.

I must refer to one sign, which is of somewhat rare occurrence, and was described by Dr. J. C. Verco (4). It consists in tenderness of the finger-ends, with subungual hæmorrhages in purplish points and lines. Dr. Verco has met with it twice, but I have never seen it except in his cases.

There is mention of enlargement and tenderness in lymphatic glands in three of my cases. In one instance the adenitis was probably due to a tooth; in Case VII. it may be explained as secondary to the tonsillitis; in

Miss B. S.'s case enlarged and painful glands were detected in the posterior triangles of the neck, in the axillæ, and in the groins. The rash was very freely distributed over the regions subserved by these glands, and I came to the conclusion that the adenitis was due to the nodes.

With regard to menstruation, there is not much reference to this point in my notes, but in four instances the periods came on during the course of the illness, and in one case they were said to be unusually scanty and unnatural in appearance. In one girl of seventeen and a half the menses had never been seen.

Albuminuria was only noticed in one case, that of an elderly lady, who now, at the age of seventy-three, has evidence of chronic nephritis.

The duration of the stage of eruption varies from about three days in the mildest cases to about three weeks in a severe case, relapses being excepted.

C. THE STAGE OF CONVALESCENCE.

The chief feature of this stage is the marked debility resulting from the illness. It astonishes the patient very often, even when the attack has been severe, and it is sometimes equally astonishing to the medical atten-

dant, if he be not aware of this fact from previous experience.

During this stage the legs still show evidences of the former nodes. On hanging the legs down, the previously faint, dull marks become much darker in hue ; on passing the finger over the sites of the nodes, a remarkable degree of subcutaneous thickening can be made out, whether the nodes were originally situated over the bone or only over soft parts. When recumbent the patient may feel no pain, but on standing he may experience a heavy, dull aching in the lower limbs. The surface of the nodes is sometimes seen to be covered with crinkly skin, sometimes to be desquamating in fine branny scales. In two instances the patients complained of itching ; once some œdema of the legs was noticed.

As regards the general symptoms, those which accompanied the prodromal and eruptive stages have practically all disappeared. In one instance (Case VI.) the patient complained of pseudo-rheumatic pains subsequently to the disappearance of the rash, but these may be explained as prodromal pains of the relapse. Another patient told me some years after that she had 'rheumatic fever' during the time that she was in the convalescent home.

In two instances the patients did not consult me till the stage of convalescence had set in—the reason for consultation in one case being quite unconnected with

the nodal fever, whilst in the other the prolonged debility was the reason. In a third case I did not come across the patient professionally till about eight months had elapsed from the date of the illness. Here massage and electricity were required for weakness of the legs, which had persisted ever since the attack of nodal fever, and from which the patient had never suffered before. The trouble appeared to me to be undoubtedly a peripheral neuritis. In another case a neuritis of the small sciatic nerve of the right side, attended by a high temperature, required rest in bed for a couple of weeks, and resisted all anti-rheumatic treatment. After recovering from this the patient had a relapse of the neuritis, which was more obstinate than the original attack, and this time was benefited by a course of electricity and massage.

D. SECOND ATTACKS.

I have already given on p. 39 three or four instances of relapses during what may be fairly considered as the same illness, the intervals between the crops of eruption only amounting to a few days, or at the outside three or four weeks. I find, however, that one attack is not protective, for I have notes of four instances in which a second attack occurred in the same patient after an interval of from one to eight years. The details of one are given in Case VII., the interval between the attacks being sixteen months. The records of the Children's

Hospital show that a child was admitted there on two separate occasions, three years intervening between them. Again, in my own practice, I attended B. W. at the age of thirteen years, and again at seventeen, with well-marked nodal fever. Dr. E. E. Moule reported to me a similar instance, in which the patient stated that she had the same disease four years previously to the date at which he attended her with erythema nodosum. Miss A. M., a school-teacher, had leave of absence for two weeks with erythema nodosum eight years before I attended her in the second attack, which she considered was more severe than the first. Nurse M.'s second attack was the worse of the two, but B. W.'s was mild on both occasions.

E. ULTIMATE HISTORY OF THE PATIENTS.

In time to come this will be interesting to follow. At present I can only say that none have come to me with any form of rheumatism except Mrs. D., aged seventy-three, who suffers from obscure pains, and who has of late developed a contracted kidney with degenerative heart disease.

Two of the patients have died of phthisis ; one had a very bad family history of pulmonary tuberculosis, but the other patient's family was unknown to me, and therefore I cannot say whether there may have been a similar predisposition in her case.

CHAPTER V

THE EVIDENCE AS TO THE INFECTIOUS NATURE OF NODAL FEVER—ITS AFFINITIES WITH OTHER FORMS OF ERYTHEMA

So far I have been describing merely the clinical phenomena which I have personally observed in connection with nodal fever. I have shown that it has a well-marked prodromal stage; that this is followed by a stage of eruption; this, again, by a stage of convalescence; that there is a tendency to relapses; and that definite sequelæ are occasionally seen. Now, in all these respects nodal fever clinically falls into line with the recognised acute specific fevers of microbic origin. Its long incubation may be compared with that of small-pox or of typhoid fever; in the fact that it is not protective against a second attack it is comparable with diphtheria; the protracted convalescence would not disgrace a case of typhoid fever. Can we rebut this clinical evidence? Can we otherwise interpret the picture which I have attempted to draw of nodal fever? It is certainly not merely a skin disease.

This was recognised by Trousseau half a century ago; but erythema nodosum is still described in works on dermatology. The constitutional symptoms of nodal fever, which I have shown to be sometimes quite out of proportion to the eruption, should alone serve to exclude it from the category of diseases of the skin.

But I do not wish to rely solely upon a clinical resemblance. I have still stronger evidence, as it seems to me, in favour of my contention as to its infectious nature, which I will now bring forward in some detail. I have already (Chapter II., p. 7) mentioned the case where a son contracted nodal fever, whilst laid up with another complaint, during the time that his mother was suffering from it.

In February, 1890, I attended Beatrice W. and her brother William, aged respectively thirteen and nine years. The former had the rash on February 7, and the latter on the 16th, just nine days later.

A much more striking instance occurred in 1892. Nellie S., aged twenty, a servant-girl, was sent into the Adelaide Hospital on account of nodal fever, and admitted into my ward on March 15. To fill her place temporarily her mistress sent for her younger sister, Temperance S. On March 29, just a fortnight later, Temperance was sent into the hospital with the same complaint, and

admitted under the care of a colleague of mine, Dr. W. T. Hayward. She had occupied the same room that her sister Nellie had vacated, but had not slept in the same bed.

I find from the records of the Adelaide Children's Hospital that Lawrence McM., aged eight, and his sister Mary, aged twelve, were admitted on March 18 and 23 respectively with this same affection.

In 1897 I was called to see John L., aged eight years, who had been ill for nine days. Observing phlyctenulæ of the conjunctiva, I inquired at random why I had not been told of the spots on the legs. The mother asked how I knew anything about the spots on the legs, seeing that they had only made their first appearance that morning. This took place on November 20. On the 23rd Nellie L. developed nodal fever as well.

In the above group of cases the patients were closely related, and it might, of course, be urged that such cases merely indicate that some families have a strong predisposition to acquire the disease. That there may be such a thing as a family predisposition to nodal fever I cannot deny, for besides the instances which I have just given of two members of the same family contracting it within a short period of one another, I find that two other patients of mine were brother and sister, and that

an interval of seven years elapsed between their attacks, which, however, occurred in the same house. Two more patients stood in the relationship to one another of uncle and nephew, but an interval of twenty-two years and the space of half the globe intervened. Case V. (p. 19) told me that her sister had been in hospital under my care with erythema nodosum in 1892, and that I had attended a third sister with it in private in 1885, and for this I can vouch. She further said that a fourth sister had also had the complaint, as well as a first cousin.

But even if we grant that there may be a family predisposition, this will not explain the fact of so many of my cases having contracted the disease within a short but fairly definite time from other patients with whom they had come in contact. They must either have contracted the complaint from one another or else from some common source within a short time of one another. Or, to put the argument in a slightly different form, granting that there may be a family predisposition to the disease, this does not exclude the possibility of the predisposed relatives contracting it from one another. Because the source of infection is not always obvious, we must not therefore deny the possibility of infection.

In support of my contention that family predisposition does not cover the whole of the ground, there will be found on p. 56 an interesting example of the nodal fever

being apparently handed on to another child, not in any way related to either of the two patients from whom he might have contracted it.

On several occasions since the incident of the two sisters contracting it from one another, I have endeavoured to prove by experiment the communicability of nodal fever, and I felt this to be more justifiable as I have never been able to convince anyone of the correctness of my theory. The trials were made with chronic invalids of tender age, who would not be fastidious about occupying beds with blankets which had not been changed after having been slept in recently by patients suffering from erythema nodosum. As all the experiments were unsuccessful, I need not go into details. The failure I do not consider to disprove much, for we all know how, when an inducement is sometimes offered to the members of a family to contract an acute specific disease, such as scarlet fever, when it is going through a house, some obstinate children refuse to take it then, and will defer it till a more inconvenient moment for the family.

Assuming also that a micro-organism ought to be demonstrated in connection with nodal fever, I interested a colleague, Dr. Borthwick, the then Director of the Elder Laboratory, in the subject, but he failed to discover anything in the blood, either of the body generally or in that taken from the nodes themselves. A bacillus was, how-

ever, discovered and described by Demme eighteen years ago, which seemed to possess the power of communicating erythema nodosum to animals ([6]).

Writing some fourteen years ago, I ventured upon a statement to the effect that erythema nodosum was but a form of erythema multiforme—that is to say, that there was no real difference between the node of erythema nodosum, or the papule of erythema papulatum, or the ring of erythema annulare vel iris. Although Trousseau sought ([5]) to insist upon the different nature of the two diseases, erythema nodosum and erythema papulatum, no one who reads attentively his classic lectures can fail to arrive at the same conclusion, I think, as myself—that not only did he not prove his case, but, rather, that he somewhat unwittingly succeeded in establishing the identity of the two forms of erythema. The difference was evidently one of form merely, and not of kind, for in the cases which he describes of erythema nodosum he states that, except over the tibiæ and ulnæ, the patches were papular rather than nodular; whilst in all the three cases of erythema papulatum the existence of genuine nodes of erythema nodosum is expressly mentioned. I have myself recently had a case of what must be termed erythema papulatum vel tuberculatum—that is to say, I could not during the whole course of the eruption have pointed out an absolutely convincing node of erythema nodosum—and hence this case is not included in my list.

Otherwise there was no inherent difference, for there was the same long prodromal period and the same high fever, the temperature ranging as high as 104°; whilst the eruption was of precisely the same character as that so frequently met with in association with undoubted erythema nodosum. The relationship of these different morphological varieties is still further illustrated, and to my mind in a most convincing manner, by some observations which were made in the Adelaide Children's Hospital. In the month of May, 1899, there had been no inmate with erythema nodosum for a long time—nearly eighteen months. John H. was admitted from the country on May 4, having been an invalid for many months. Lillie H. (no relative of J. H.'s) was in the same ward from May 9 to May 14 with erythema nodosum of a mild type. On the 13th Harry W. was admitted into an adjacent ward (which communicated with J. H.'s) with the eruption all over his legs, and was kept in bed till May 21. Meanwhile our first patient (J. H.) had become so much better that he was able to run about, and he was in the habit of visiting the next ward to play with H. W. about the end of May; on June 10 he had spots on both legs. Now, while both L. H.'s and H. W.'s attacks were of a mild description, J. H. became extremely ill—his condition, indeed, gave me very considerable anxiety; but the particular point upon which I wish to dwell is the fact that the bulk of his rash, which was widely distributed over the limbs, assumed the form of erythema

circinatum. When this lad had completely recovered, there was no evidence that his heart had been affected, either as regards the pericardium or the endocardium, although his illness before admission was acute rheumatism of eleven months' duration, and when his nodal fever was at its height a basal murmur could be heard.

To briefly recapitulate my views, I hold that the eruption of nodal fever is polymorphic ; that characteristic nodes of erythema nodosum are very seldom absent (about 1·5 per cent. of cases) ; that the next most frequent and constant form of spot is the papule or tubercle, and after these the large diffused blotch ; that the rarest form is probably that of the ring (erythema annulare, erythema circinatum).

CHAPTER VI

ETIOLOGY

The Influence of Age.

Out of 44 cases of nodal fever observed in my private practice, it will be seen that about two-thirds occur during the second and third decades of life—viz., 29 cases.

Under 10 years of age	7 cases
Between 10 and 20 years of age	14 „
„ 20 „ 30 „	15 „
„ 30 „ 40 „	6 „
„ 40 „ 50 „	1 case
Over 50 years of age	1 „
Total	44 cases

When we come to analyze the 14 cases occurring during the second decade of life, it is found that 6 cases belong to the first quinquennium, and 8 to the second. If now we group our cases afresh, and divide them into three classes—viz., those occurring before the age of puberty, those occurring between this period and the climacteric, and those met with after the climacteric has been established—and if for convenience we assume that puberty

occurs at the age of fifteen, and that the climacteric occurs at fifty, we find that we have :

Before puberty	13 cases
Between puberty and the climacteric ..	30 „
After the climacteric	1 case
Total	44 cases

The Influence of Sex.

Before the age of puberty this is not very obvious ; thus, out of 16 cases admitted into the Children's Hospital, where the ages ranged from three to twelve years, there was an equal number of boys and girls. Amongst the 13 cases which occurred in patients of mine under the age of fifteen years, there will be noticed a slight preponderance of boys, who number 8 as against 5 girls. Grouping these two lots together, we find that, out of 29 cases occurring prior to puberty, there were 16 boys and 13 girls. After the age of puberty, however, females have an immense majority, there being only 3 men among my private cases, as against 28 women in the combined adult and old age groups. Subjoined is an analysis according to the different decades of life :

PRIVATE CASES.

	Males.	Females.
In the first decade of life.. ..	5 ..	2
„ second „	5 ..	9
„ third „	1 ..	14
„ fourth „	0 ..	6
„ fifth „	0 ..	1
„ seventh „	0 ..	1
	11	33

The Influence of Race.

All my cases occurred in whites, and all but two were Australian-born. I have not heard of a case reported in an aboriginal or in an Asiatic.

The Influence of Social State.

Of those who were above the age of puberty, 31 in number, 25 were single—viz., the 3 males and 22 females —whilst there were 5 married women, not including the solitary widow of the old-age group.

The Influence of Occupation.

Excluding all school-children, some of whom were over the age of puberty, I find that of the men 2 were clerks, and the third a labourer ; and that, out of 25 females, 15 were engaged in domestic work (though only one of them was actually a servant), 4 were school-teachers, 3 were either employed in shops or else were dressmakers, 2 were nurses (one always being employed out of doors), and the remaining case was that of a medical student. Altogether, we may say that out of 28 patients only 3 had out-door occupations.

The Influence of Season.

This is mentioned in 60 out of my full series of 63 cases, and in addition I have notes of 4 cases reported

to me by others, and from these 64 cases I find that there occurred—

During the	first	quarter of the	year	..	..	14 cases
„	second	„	„	..	..	14 „
„	third	„	„	..	..	15 „
„	fourth	„	„	..	..	21 „
						64 „

The Influence of Locality.

With the exception of two cases, all my patients contracted the disease in Adelaide or its suburbs.

Analysis of the Family History.

As I have been engaged in general practice in Adelaide for twenty-one years. I am naturally well acquainted with the family history of many of my patients. I find that my own 44 cases of nodal fever occurred in 41 patients distributed amongst 34 families. With 9 of these families I am not acquainted ; of the remainder I consider 9 to be perfectly healthy, whilst I know something to the disadvantage of 16 families, which I will proceed to give in tabular form :

Family No. I.—The father died at seventy of valvular disease of the heart.

Family No. II.—The father is an alcoholic ; the mother

died of phthisis; five of their children also have succumbed to this disease.

Family No. III.—In this family four sisters are said to have had nodal fever, as well as a first cousin.

Family No. IV.—A brother and sister have been operated upon for fistula in ano; no history of phthisis; a brother has had lumbago.

Family No. V.—Father has had lumbago, and at other times slight albuminuria with oxaluria.

Family No. VI.—Father has had gout.

Family No. VII.—Grandmother, aged eighty-three, has senile heart disease with chronic rheumatism.

Family No. VIII.—A brother and sister have been insane, the former to a mild degree, the latter to the extent of requiring restraint in an asylum for puerperal mania.

Family No. IX.—The mother is said to have died of purpura hæmorrhagica.

Family No. X.—The father is a confirmed alcoholic; the mother died suddenly at about fifty of a dilated heart, and a sister died of phthisis.

Family No. XI.—The father has had lumbago and sciatica, and an uncle died of phthisis.

Family No. XII.—The mother has had sciatica.

Family No. XIII.—Father said to be 'rheumaticky.'

Family No. XIV.—Father has died since of cerebral hæmorrhage.

Family No. XV.—Father has since died of phthisis.

Family No. XVI.—Two first cousins in different families have shown signs of pulmonary tuberculosis.

On analyzing this, what does the rheumatic history amount to? One parent is said vaguely to be 'rheumaticky,' whilst an aged grandmother undoubtedly has it; in three other families lumbago is mentioned, and sciatica in another, the two being bracketed in the case of one parent; in addition to this, we have gout in one father, three mentions of heart disease, and one death from cerebral hæmorrhage. On the other hand take the tubercular history. Here we have clear history of tubercular phthisis in 5 out of 16 families, the taint being parental in 3 instances and collateral in the others; also there is mention of fistula in another family. I have gone into these particulars at some length because I feel that it would be just as easy to argue for a tubercular causation of nodal fever as for the rheumatic theory.

Analysis of the Previous History of the Patients.

With this I am even better acquainted than with the parental or family history. I can find no notes in 3 of my 44 private patients; in 28 others

there appears to have been no previous illness of importance. Of the remaining 13 patients I could only trace a previous history of some sort of rheumatism in 5 cases, the others having suffered chiefly from chlorosis, debility, dyspepsia, and in 1 instance from eczema.

So far as anæmia is concerned, whilst the patients are frequently pale both during the fever and the stage of convalescence, in only 5 cases was there any mention of chlorosis at some time preceding the illness. Very often this was so far antecedent as to justify its being ignored as a predisposing cause ; moreover, several of my patients have been quite robust at the time, and possessed of a good healthy colour.

The rheumatic antecedents I have also most carefully investigated. One patient had once a stiff neck and sore throat ; she had no cardiac murmur. The second had chlorosis eight years before the nodal fever ; she also had pain and swelling of the larger joints of the lower limbs three months before the fever occurred, but was not laid up. She was treated with sodium salicylate, and later on, as the pains persisted, with guaiacum. Eight months after the nodal fever she had a mild attack of sciatic neuritis, but again did not lay up. The details of the third patient are given in Case VI. (p. 20). A fourth case was said to have had rheumatic fever, and to have

been under my care with it some five years previously, but, curious to relate, I have no recollection of the circumstance. This patient also has no murmur. The fifth patient had muscular rheumatism of the thigh in 1894; in 1897 arthritic rheumatism for a few weeks, although she was only laid up for a few days. She was relieved by salicylate. Subsequent to the nodal fever she had sciatica, and lately this year (1904) she has consulted me on account of some obscure pains, and I find that she has chronic kidney disease, associated with cardiac degeneration.

In hospital practice one of the worst cases that I have had to deal with came into the Children's Hospital from the country, with a history of previous rheumatism. He had been ill for eleven months, had extreme dropsy of the legs, and his life had been despaired of. He improved under treatment, and then contracted nodal fever in the hospital. He was so extremely ill with it that I thought he would succumb; however, he recovered, but neither on admission nor before he left could I detect any valvular murmur, though his heart was irregular in its action (p. 56, J. H.).

In no instance do I remember attending a patient with nodal fever who had previously suffered from tuberculosis in any form.

The Supposed Relationship to Rheumatism.

It would be, perhaps, convenient if we were now to examine more critically the causal relationship which has been alleged to exist, but which is by no means universally accepted as existing, between erythema nodosum and rheumatism, including under this term not only rheumatic fever, but also the manifold varieties of chronic rheumatism, whether situate in the joints, muscles, or nerves. If the matter under discussion were only the relationship of nodal fever to acute rheumatism (whether proved by the history of a definite previous attack of rheumatic fever, or assumed on account of the existence of a valvular murmur), my difficulty would not be very considerable, for I should merely have to state that my cases did not support the conclusions arrived at by Dr. Stephen Mackenzie in that paper, published some eighteen years ago, which is so frequently quoted in support of the rheumatic theory ([7]). There is this difference between Dr. Mackenzie's series of 108 cases and mine, that whereas his were culled from the records of four London hospitals by four separate compilers, presumably the medical registrars of those hospitals, and therefore probably only a very small proportion of the cases came under his own personal and continuous observation, on the other hand, out of the 63 cases which form the basis of this monograph, no less than 44 were under my own observation in private, and 19 others

were seen amongst my own and my colleagues' in-patients at the Adelaide Children's Hospital and the Adelaide General Hospital. Moreover, I have been interesting myself personally in all these cases; in many instances I have known a good deal about the families, having attended some of them for over twenty years. But however strong my views on this subject may have been, I have endeavoured to avoid being biassed by them, and have tried faithfully to record the facts. Dr. Mackenzie found a relationship to acute or subacute rheumatism in 15·7 per cent. of his cases, all these cases being severe enough to require admission into a London hospital; whereas I find that, out of 63 cases distributed amongst 49 families, a family history of rheumatic fever is not recorded once, and in the previous histories of the patients themselves there are only two mentions of rheumatic fever, one as immediately preceding the nodal fever, and the other as having occurred some five years before. In neither instance was any organic murmur detected, and in the second case I have no recollection of the circumstance. I am quite certain that I should not have forgotten a genuine attack of acute rheumatism in a patient; on the other hand, what one may have provisionally pronounced to be an attack of rheumatism or 'rheumatics' may easily have become distorted in a parent's recollection into rheumatic fever after the lapse of five years.

When we come to deal with the less definite manifestations of 'rheumatics,' so called, we naturally find more evidence of the supposed association. Thus, one parent is said to have been 'rheumaticky,' one grandparent has chronic joint rheumatism, whilst there is mention of heart disease in three families, and of lumbago or sciatica in three others (p. 63). In four cases, as previously detailed (p. 64), there was more or less strong evidence of previous rheumatism in the patients themselves, varying from a stiff neck to multiple arthritis, and including sciatica and occipital neuralgia ; in two of these instances the symptoms were distinct from the attack of nodal fever, whilst in the remaining two they may almost be considered as prodromata.

Both the family and personal history in my cases may therefore be said to be very weak as regards the prevalence of acute or chronic rheumatism or its congeners as antecedents of nodal fever.

Those symptoms which I have preferred to term 'pseudo-rheumatic,' whether manifested during the prodromal, the eruptive, or the convalescent stage, have been already sufficiently analyzed so far as my private cases are concerned. But in support of my contention that they are part and parcel of the nodal fever and not connected with rheumatism at all, it appears to me that there are two strong arguments to

be brought forward, one of them being the result of treatment with antirheumatic remedies, and the other the condition of the heart during the course of the illness and afterwards.

We all know that many cases of vague illness are met with, especially in private practice, characterized by pains seated in the joints, the muscles, or the nerves, and, further, that many of these cases, more particularly when attended by elevation of temperature, are speedily relieved by the administration of salicylate of soda or its allies; at least, this has been my experience. Now, even if we do not care to commit ourselves to any definite diagnosis, our patients will often unhesitatingly pronounce themselves to be suffering from rheumatism or from influenza; and if they improve rapidly, they consider that we have cut short the disease by means of our drugs. Such pains are sometimes, and perhaps often, of rheumatic origin; but precisely similar pains usher in an attack of influenza, and the pains which occur during the prodromal stage of nodal fever are in no way distinguishable from rheumatic or influenzal pains. Now, what has been my experience with regard to the pains and other pseudo-rheumatic affections during an attack of nodal fever? It has been this, that although till lately I have been in the habit of treating systematically nearly every case from the outset with sodium salicylate, in the hope of bringing down the temperature

and of relieving the various pains, the drug has invariably failed to do any good, for it has not been successful either in reducing the temperature or in alleviating the pain ; so little faith, indeed, have I in it now that I never administer it, once the diagnosis is certain. I must admit that in one case which I saw (on but one occasion only), the temperature on the previous evening had been 104·8°, and after a few doses of salicylate it had come down to normal by the next morning, thus enabling the patient, a medical student, to sit for her examination on that day ; but, from what she subsequently told me, it neither cut short the illness nor reduced the temperature permanently, nor prevented the onset of the ' rheumatics '; moreover, my charts of the disease often show occasional and inexplicable vagaries of the temperature.

Then, again, as regards the heart, I have also to admit that on three occasions during the course of nodal fever I have heard a distinct murmur. In one case at the Children's Hospital (p. 56, J. H.), whilst there was no reason to doubt but that the child had suffered, for many months prior to admission, from genuine acute rheumatism, and that, too, of a severe type, still, at the time of admission no murmur could be detected. During the nodal fever a murmur of indefinite character was heard, but it again vanished when the child had completely recovered. In my earliest case (p. 6, F. D. L.), I find it noted that a murmur was audible at the

base when the temperature was high, but none could be heard later on. In my most recent case, again (Case VII.), I heard a clear, soft murmur all over the præcordia, but it had this peculiarity, which a colleague was able to confirm, that it was neither conducted towards the axilla nor towards the right shoulder. I prophesied that it would disappear after a time, and when I saw the patient a month later I could find no trace of it; still later again, a localized murmurish sound could be detected at the apex, but only with every fourth beat of the heart, and at the end of an inspiration. It was obviously not valvular. I have assumed that these murmurs are either hæmic or myocardial in origin, and I am inclined to the latter supposition, for I feel sure that myocardial changes occur in nodal fever; but whether my supposition be correct or not is immaterial, for it is certain that these murmurs are identical with those not infrequently heard temporarily during the course of other acute febrile diseases, such, for instance, as enteric fever.

On tonsillitis as evidence of a rheumatic diathesis I do not lay much stress. The association of tonsillitis with rheumatism may be freely admitted, and the comparative frequency with which it occurred in my series of cases (about one-sixth), might be quoted in support of the relationship of the two diseases. But tonsillitis is a very common complaint, and for one case followed

by rheumatism there must be at least forty-nine which have no such sequel.

Altogether, I feel strongly that the more carefully we analyze the histories of our cases, the more slender shall we find the evidence of the supposed association between erythema nodosum and rheumatism. It is as misleading, to my mind, to talk of these symptoms as being 'rheumatic' as it would be to argue that the arthritis which sometimes follows gonorrhœa is a proof of the rheumatic nature of that somewhat common complaint, and I think that it would be just as easy to prove, so far as mere statistics are concerned, that the disease is related to tuberculosis as to rheumatism.

It may be asked what explanation I have to afford of the undoubted occasional co-existence of synovial and teno-synovial effusions during the course of nodal fever. I have always supposed that just as the eruption affects the mucous membranes as well as the skin, so it also affects the surfaces of the synovial membranes of the joints and the linings of the tendons, giving rise to the pains and the more or less scanty effusions. I think that this is more probable than that the symptoms are due to a synovitis of toxæmic origin.

CHAPTER VII

PATHOLOGICAL ANATOMY AND PATHOLOGY

Not having seen a fatal case, I can add nothing to the descriptions given in works on skin disease of the pathological anatomy of the nodes. Assuming my theory of the acute specific nature of nodal fever to be proved, and assuming, further, that the bacillus described by Demme (6) —or some other micro-organism, if this particular bacillus be not confirmed as the one which fulfils the postulates of Koch—is the actual cause of the fever, we can only regard the nodes, whether cutaneous, mucous, or synovial, as the local manifestations of a general poisoning. We must describe them as circumscribed patches of inflammation, the result either of the presence of the bacilli themselves or else merely the consequence of some toxin secreted by the bacilli ; the nodes have their seat of election, and the inflammatory process involves the subcutaneous, the submucous, or the subsynovial tissues as well as the surfaces on which the nodes appear. The nodes are in no sense periosteal ; they are akin to the

eruption of small-pox or of measles, though in appearance, especially when fading, they more resemble the hemorrhages of scurvy or of purpura. The intensity of the poison leads to considerable effusion of serum and of blood-pigment, if not actually to the escape of blood-corpuscles ; the effused serum is very plastic, and slow to become absorbed ; there is no tendency to suppuration or ulceration ; in exceptional cases the lymphatic glands become inflamed.

As to the pathology, this has, I think, been already sufficiently discussed indirectly in the foregoing pages ; but I may here draw attention to the fact that modern writers, who have considered but have not accepted the theory of specific infection, differ as to whether the disease should be classed with the inflammations or with the angeio-neuroses.

CHAPTER VIII

DIAGNOSIS

The diagnosis of nodal fever may occasionally be hazarded during the prodromal stage, and turn out to be correct, as in Case II., from the occurrence of conjunctival phlyctenulæ in association with a febrile illness of an obscure nature. (Compare also the case mentioned on p. 52). But prodromal phlyctenulæ, or some form of conjunctivitis, were only noticed in about one out of eight cases, so that in the remaining seven cases, unless there should happen to have been an instance of the disease recently in the house, a correct diagnosis is scarcely likely to be arrived at. This difficulty in arriving at a diagnosis has been previously alluded to, and illustrations have been given of the mistakes which have been made (p. 27).

When the rash has appeared, there should be no difficulty in recognising a typical node, with its rosy tint, its oval outline, its raised appearance, and its situation on the leg ; in none of my cases, as already mentioned,

have such typical nodes been absent. I believe, however, that in time to come we shall recognise that there are occasional cases of nodal fever in which an absolutely typical node is not forthcoming, cases which have hitherto been looked upon, perhaps, as instances of erythema papulatum, and I expect that the proof of the identity of these cases with what I have described as nodal fever will be furnished by the bacteriologist.

Could any other complaint be mistaken for erythema nodosum in the eruptive stage? I scarcely think so by anyone who is familiar with the latter. Undoubtedly there may be cases seen occasionally, with red patches on the legs, as to the nature of which we may feel uncertain; but even if we cannot label them exactly, we can generally say that they are *not* cases of nodal fever. There is, however, one disease to which I feel that I ought to allude, and that is peliosis, or purpura rheumatica. I must at once confess that this is a disease which I have never met with, and which I have never had pointed out to me, either in England or in Australia. It occurs to me when reading the descriptions of this disease that some of the cases I have narrated might be regarded as instances of purpura rheumatica; if so, then I should contend that erythema nodosum and purpura rheumatica are one and the same disease, or merely different types of what I call nodal fever, and here I should have the support of the opinion of my former teacher, Dr. Robert Liveing (8).

CHAPTER IX

PROGNOSIS

The prognosis is very favourable, but, from the severity of some of my own cases, I could easily conceive of a fatal result occurring ; and if my contention is accepted, that Trousseau's cases of erythema papulatum (with erythema nodosum) are absolutely identical with nodal fever, then death has actually occurred in the past, and may occur again. I should be more inclined to give a grave prognosis in the rare cases which occur in elderly persons, for then I should fear the possibility of death from myocarditis or its consequences. Short, however, of such a disaster, we can only say that an attack may last, with intermissions and recurrences, from a few days to many months, or even a year or more ; that one attack may not be protective, but that one out of about every dozen cases or so may look forward to the possibility of a second attack after an interval of from about eighteen months to eight years. Apart from recurrences and second attacks after a long interval of health, we may

warn our patients that the illness is likely to be followed by a prolonged debility, and that such sequelæ as peripheral neuritis do actually occur; but we may also give them this consolation, that they will exhibit no special tendency to rheumatism or valvular disease of the heart. It is somewhat singular that the only two cases which have died, as far as I know, have succumbed to pulmonary tuberculosis.

CHAPTER X

TREATMENT

We must at once confess that we are unable to arrest the progress of this disease or to modify its course ; at least, that is my opinion. As we are ignorant of the exact conditions under which it develops, we are unable to prevent its occurrence ; if, however, a case has once broken out in a household, we can at all events endeavour by isolation to prevent the disease from spreading to other members of the same family. When once it does occur, we can only treat it empirically so far as drugs are concerned ; in my experience their employment has been most unsatisfactory. I have generally prescribed sodium salicylate when called in to see the patient in the febrile prodromal stage, but neither this drug nor any other antipyretic has seemed to me to do any good. Again, I have used the same drugs during the stage of eruption, and here again they have proved most disappointing. In some instances I have tried liquor hydrargyri perchloridi or the glycerinum acidi carbolici internally with no better results. In one instance sodium salicylate did bring down the temperature, which had reached nearly

105° when the rash, a very severe one, was at its height, to normal the following morning, thus enabling the patient, a medical student, to sit for an examination; but in this case it certainly did not cut short the duration of the disease, and the arthritic symptoms were very marked. On the other hand, where no antipyretic drugs have been employed I have noted erratic behaviour of the temperature. A placebo, such as a mixture containing liquor ammonii acetatis, will satisfy the friends, and it has this advantage, that it probably does not materially affect the course of the disease, and thereby vitiate our clinical observations. If we keep the patients in bed, it is remarkable how little they seem to suffer either from the constitutional symptoms which attend the fever, or from the pain in connection with the nodes; an exception to this statement must be allowed where the arthritic complications are at all severe. Besides keeping the patients in bed, we can regulate their diet and attend to their bowels; we can apply glycerine of belladonna to the nodes, or some other soothing application, though it is seldom really necessary. The convalescent stage requires generally rather more attention; it is a mistake for the patient to hurry back to work, for the debility which attends an attack of nodal fever is, as I have said before, a very marked feature of the disease, and in one instance peripheral neuritis consequent upon it, as I believe, necessitated a few weeks' course of treatment by electricity and massage and hypodermics of strychnine. Of course the usual tonics may be given internally.

CHAPTER XI

THE HISTORY OF ERYTHEMA NODOSUM

Like many other advances in medical science, modern dermatology may be said to date from the latter half of the eighteenth century. Professor Plenck of Buda in 1776 grouped skin diseases in fourteen classes, and Willan, the Englishman, published two years later his modification of this arrangement, whereby only eight classes were recognised. Willan's classification held good for many years ; in it erythema nodosum appears as a species of the genus erythema, which belongs to the third order—viz., the exanthemata. Amongst other species of the same genus we find erythema marginatum, erythema papulatum, and erythema tuberculatum. The mantle of Willan descended to his colleague and disciple, Dr. Bateman, and both names are often associated as though the classification were a joint effort. The seventh edition of Bateman's book on Cutaneous Diseases was edited after his death by Dr. Anthony Todd Thomson. All these authors appear to have recognised the fact that erythema

nodosum (in common with erythema papulatum and erythema tuberculatum) is often preceded by febrile symptoms, but these, as they alleged, generally abated on the appearance of the rash ; they noted also the preference the disease exhibited for the female sex in adults. In a 'Cyclopædia of Medicine,' published in 1833, there is an article by Dr. W. B. Joy, who quotes Rayer as having in 1827 adopted six out of the seven species of erythemata of Willan to form the 'symptomatic group,' as opposed to the 'idiopathic' group, of the genus erythema ; he goes on to say that the symptomatic erythemata (erythema nodosum, erythema papulatum, etc.) are associated with many inflammatory affections, especially those of the mucous membranes of the stomach and intestines, and that the symptoms which are attributed to the skin affection are in reality due to the state of the internal organs.

In 1829 Professor Schoenlein (?), of Freiberg, described a new skin disease, to which he gave the name of peliosis rheumatica. In commenting upon his description, a later writer, Dr. Stephen Mackenzie, says that 'it is clear from Schoenlein's own words that he described an erythema papulatum.' Purpura rheumatica is a synonym for peliosis.

Gibert (1885) thought that erythema nodosum nearly always manifested itself in the hot seasons. Amongst

other French writers MM. Rayer, Bouillaud, and Bazin should be mentioned as being amongst the earliest to insist upon the relationship of erythema nodosum to rheumatism. M. Hardy did not apparently favour this theory, but thought that erythema nodosum had to do with the change of the seasons, with fatigue, irregular catamenia, and with 'émotion morale vive.'

In the third quarter of the nineteenth century dermatology made great strides, and a number of physicians devoted themselves to this special branch of medical study. For our particular purpose it will be sufficient to take Hebra as the most eminent writer on this subject amongst the Germans, and Trousseau as having admirably summed up the teaching of the French school in his two lectures before referred to. M. Trousseau considered that erythema nodosum was deserving of much greater attention than was usually devoted to it in text-books, for it was a specific and separate disease, and not merely a variety of erythema. He took exception to the statement of his colleague, M. Hardy, that in rare chronic cases the nodes suppurated, and in graceful terms he threw doubt upon M. Hardy's diagnosis; he noted the conjunctival symptoms, which he described as erythematous patches—pimples rather than true nodes; he remarked upon the tedious convalescence. As regards the articular symptoms, as he had never met with redness nor swelling of the joints, nor found any cardiac lesion, he appeared to

dissent from the rheumatic theory; but in his next lecture upon erythema papulatum he subscribes without reserve to this theory, and even uses the expression 'erythematous rheumatism.' Whilst striving to show that erythema papulatum is a separate disease from erythema nodosum, he admits the difficulty he finds in proving his thesis, seeing that in the latter disease he has always found numerous papules, whilst in the three cases of erythema papulatum which he describes (one of which proved fatal) he also found true nodes on the legs. He further writes that 'the mutual relations of rheumatism and erythema nodosum have been pointed out in Germany by Professor Schoenlein, who has given to erythema nodosum the name of "rheumatic purpura."' This view is held by most of the French authors.

Hebra simplified Willan's classification by grouping together several of his species (erythema papulatum, erythema tuberculatum, etc.) under the general heading of 'erythema exudativum multiforme,' but he did not include erythema nodosum in this group, as he recognised certain differences which entitled it to be described as an independent malady; he gave it also the synonym 'dermatitis contusiformis.' As in his description of erythema nodosum he states that none of the more important organs of the body are ever especially attacked, presumably he did not subscribe to the rheumatic theory, but he lays considerable stress upon the evidence of in-

flammation of the absorbents. He recognised Schoenlein's as a separate disease.

Among English writers of this period, Erasmus Wilson stands out pre-eminent ; he reverses M. Rayer's grouping, and classes erythema nodosum and its congeners amongst the general or 'idiopathic' varieties of erythema, as opposed to the local and the symptomatic groups. He recognises that erythema nodosum, erythema papulatum, and erythema tuberosum are closely allied, and in later days he is quoted as having said that he would have classed them all together, were it not for fear of creating confusion.

Coming now to the last quarter of the last century, we find Malcolm Morris (1879) stating definitely that erythema nodosum is not a skin disease at all, but what he considers it to be he does not indicate. In 1894 he does not seem to be so decided in his view ; he further states that he thinks it rare after the age of twenty. Liveing (1882) reunited erythema nodosum to Hebra's erythema multiforme under the name of 'polymorphic erythema' ; he corrects the statement of Hebra and of Tilbury Fox that erythema papulatum, erythema tuberculatum, erythema annulare, erythema iris, and erythema gyratum are all different stages of the same lesion, and shows that they are merely morphological varieties, which may exist side by side, but retaining their distinctive characters

from beginning to end. Erythema gyratum may possibly be often an advanced stage of erythema annulare, but an ordinary case of papular erythema does not go through the transitional stages of tubercular and annular erythema to become in the end the gyrate form. Liveing further definitely stated his opinion that the arthritic symptoms, the so-called rheumatism, were constitutional symptoms properly belonging to erythema nodosum; he also adduces strong arguments for considering peliosis rheumatica to be indistinguishable from this disease. Jamieson (1888-1891) agrees with me that Trousseau's arguments favour the identity of erythema nodosum and erythema papulatum rather than the distinction between them for which he contended; he considers that peliosis is 'merely a phase of erythema multiforme modified by some condition of the blood or peculiarity of the tissues.' He quotes Polotebnoff as having in 1887 suggested that the erythemata might be classed under a hitherto undescribed form of eruptive fever.

Professor Schwimmer of Buda-Pesth described the erythemata under the heading of 'the vaso-motor sensory neuroses of the skin' (1885). From this author I gather that a German writer (Lewin) had even at that date attempted to prove that 'erythema multiforme was a pyrexial affection analogous to the exanthematous conditions,' but not to Schwimmer's satisfaction. He considered erythema nodosum to be somewhat akin to the

polymorphous erythema, but not to be identified with it in a clinical sense ; he further says that in severe cases ulceration of the mucous membranes and serous inflammations sometimes prove fatal.

Radcliffe Crocker (1893) includes in the group of erythema exudativum, erythema multiforme, erythema nodosum and peliosis. He thinks recurrences are rare in erythema nodosum, and quotes Lewin as having found other forms of erythema in no less than twenty-five out of fifty-five cases of erythema nodosum.

Colcott Fox (1899) sums up in an able manner the various views as to the nature and origin of erythema nodosum, but does not clearly indicate his own attitude towards them.

Dawson Williams appears to thoroughly agree with the rheumatic theory, seeing that he describes erythema nodosum under the heading of ' rheumatic fever,' and not along with erythema multiforme.

Modern opinion may be further illustrated by the writings of some eminent American dermatologists. Hardaway considers erythema nodosum as closely allied to, if not identical with, erythema multiforme. Shoemaker found that the lithæmic diathesis was an apparent cause in his cases, but mentions that Baumler of Freiburg con-

sidered erythema nodosum and erythema multiforme to be different forms of one disease, which was of infectious origin ; he quotes Launois, who saw three cases develop within eight days of the admission of a patient with erythema nodosum in the same row of hospital beds, and an Italian writer whose patient had eleven attacks in two years. Duhring, whilst he believes erythema nodosum to be in most, if not in all, cases an infectious disease, does not look upon it as being due to a specific infection ; some peculiar atmospheric influence or some local or climatic condition is invoked to explain the occurrence of several cases in one family at or about the same time.

In 1888 Demme published an account of a bacillus found in erythema nodosum (but not in erythema multiforme), which now bears his name ; it was discovered in the blood along with other cocci, and when inoculated into the skin of guinea-pigs, or injected into the blood, it produced an eruption resembling erythema nodosum, which was followed by gangrene.

As we have but a very poor medical library in Adelaide, I feel that I ought to apologize for this imperfect sketch of the history of nodal fever.

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